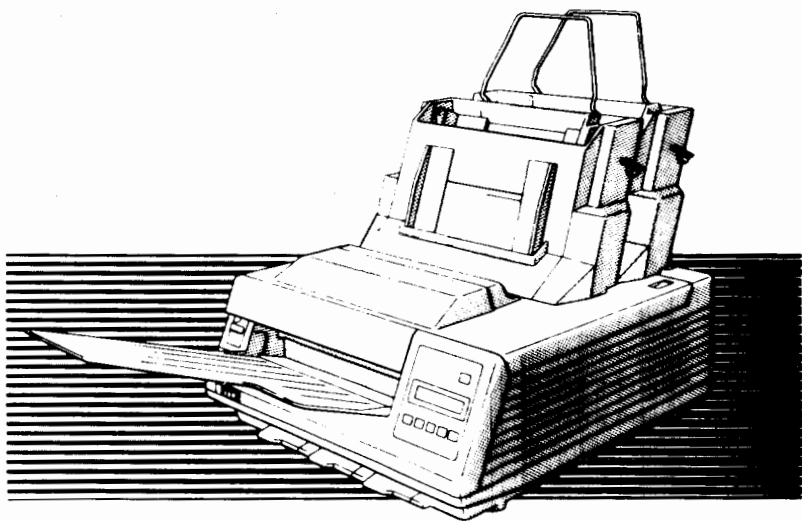


RX7100PS
(4MB)
Page Printer
User's Manual



RX7100PS

48FH5049E-01

Federal Communications Commission Radio Frequency Interference Statement for American Users

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna of the affected radio or television
- Relocate the printer with respect to the radio or television
- Move the printer away from the radio or television
- Plug the printer into a different outlet so that printer and the radio or television are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington DC 20402, Stock No. 004-000-00345-4.

It is necessary to use shielded interconnect cables to ensure compliance with FCC Class B limits for radio frequency emissions. The length of the interface cable must not exceed 10 feet (3 m). The length of the power cord must not exceed 10 feet (3 m).

This equipment has been tested as model number M3706MB.

The contents of this manual may be revised without prior notice, without obligation to incorporate changes and improvements into units already shipped.

Every effort has been made to ensure that the information included here is complete and accurate at the time of publication, but Fujitsu cannot be held responsible for errors and omissions.

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48FH5049E-01, May 1989

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About this Manual

This manual explains how to set up, operate, and maintain the Fujitsu RX7100PS page printer. It also tells how to make your computer and your programs work with the printer. In addition, it contains information on available options and accessories.

It is written with the non-technical user in mind – someone using commercial word processing, graphics, and desktop publishing programs. It also contains information useful to programmers and other experienced users.

Using this Manual

If you are a first-time user, we suggest you read Chapters 1 through 3 to get started. After you've practiced using the printer, continue with Chapter 4.

Those familiar with this type of printer can scan the chart below to find the information they need. The chart summarizes the organization of this manual.

| | |
|--|---|
| Chapter 1: Introduction | Lists some of the unique features of the RX7100PS and identifies the various parts of the printer through the use of illustrations. |
| Chapter 2: Ten Easy Setup Steps | Combines quick start instructions for experienced users and detailed explanations for novices to guide you through unpacking, setup, paper loading, and test printing. |
| Chapter 3: Printing with the RX7100PS | Explains the everyday operation of the printer: using the control panel, the types of paper the printer will accept, and special software considerations for page printers. |

| | |
|--|---|
| Chapter 4: Using Menu Mode | Describes the operation of menu mode, including selecting fonts, page layout, interface parameters, and checking the printer's operation. Quick reference charts and detailed explanations of the options are included. |
| Chapter 5: Using Commercial Software | Tells you how to make your software work with your printer. Specific tips are included for several major programs, along with guidelines on making most programs work with the RX7100PS printer. |
| Chapter 6: Using Fonts | Explains fonts in detail: what they are, how they are described, and how to select them using the control panel and software commands. |
| Chapter 7: Maintenance | Describes routine maintenance procedures, such as cleaning and process cartridge replacement. |
| Chapter 8: Solving Problems | Lists all the messages you may see on the control panel (and what to do when you see them) and describes troubleshooting procedures for printer and print quality problems. |
| Appendix A: Operator Summary (PostScript) | Lists all of the PostScript programming language operators. |
| Appendix B: Command Reference (LaserJet) | Gives a brief explanation of every command in the printer's HP LaserJet emulation mode. |
| Appendix C: Character Set | Shows all the characters available on the RX7100PS, along with the codes to access them. |

| | |
|--|--|
| Appendix D: HP Font Cartridge Compatibility | Shows the Fujitsu equivalents to the HP LaserJet font cartridges. |
| Appendix E: Interface Information | Provides technical information about the parallel and serial interfaces for the programmer or hardware designer. |
| Appendix F: Supplies and Accessories | Shows the part name, order number, and a brief description of supplies and accessories available from Fujitsu. |
| Appendix G: Specifications | Lists technical information about the printer and the media it can print on. |
| Glossary | Explains terms used in this manual. |
| Index | An important reference tool. |

Conventions Used in this Manual

Notes, cautions, and warnings are enclosed in boxes for greater visibility. *Notes* include remarks, tips, and other useful information. *Cautions* indicate that damage to the printer may occur if a procedure is not followed correctly. *Warnings* indicate that personal injury may occur if a procedure is not followed properly.

Buttons on the control panel (or keys on your computer keyboard) are shown in **BOLD** type. In charts and illustrations, they are enclosed in a box to make them even easier to identify.

Control panel messages are shown in CAPITAL letters – just as they are on the printer.

We hope that you find this manual helpful and that you will be able to use this printer to full advantage. We invite your suggestions and comments on *RX7100PS Page Printer User's Manual*.

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Introduction

Introduction

Chapter 2

Ten Easy Setup Steps

Setup

Chapter 3

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**Menu
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1 Introduction

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Introduction

Your new Fujitsu RX7100PS page printer is equipped with the following features:

- Software compatibility with Hewlett-Packard LaserJet series II and PostScript printers, the most widely used page printers with IBM and Apple personal computers
- Additional printer emulations available on plug-in cards, which make the RX7100PS compatible with programs written for other printers
- Parallel (Centronics), serial (RS232C and RS422), and Apple-Talk interfaces for easy connection with most computers and networks
- Paper bins with a capacity of 150 sheets each
- Ability to print on plain paper, printed paper, and overhead transparencies
- Pages are printed face down in correct order
- Thirty-five resident fonts (Times Roman, Helvetica, Helvetica Narrow, Courier, Avant Garde, New Century Schoolbook, Bookman, Palatino, Zapf Chancery, Zapf Dingbats, and Symbols), which can be printed in any size when using PostScript
- Six resident fonts (Courier, Courier Bold, and Line Printer in portrait and landscape orientations) when using the LaserJet emulation
- Three slots for additional fonts available on plug-in cards

- Control panel with 16-character display to advise you of printer status and guide you through selection of fonts, page layout, and other options
- Process cartridge that provides long life (6000 pages) and easy replacement

Getting Acquainted

The following illustrations show the various parts of the RX7100PS printer. These parts are referenced throughout this manual, so take a moment to familiarize yourself with them.

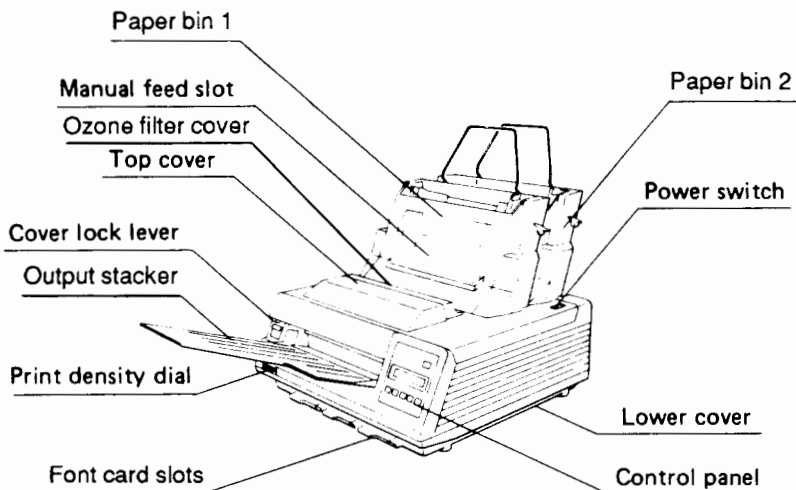


Figure 1-1 Front and right side views

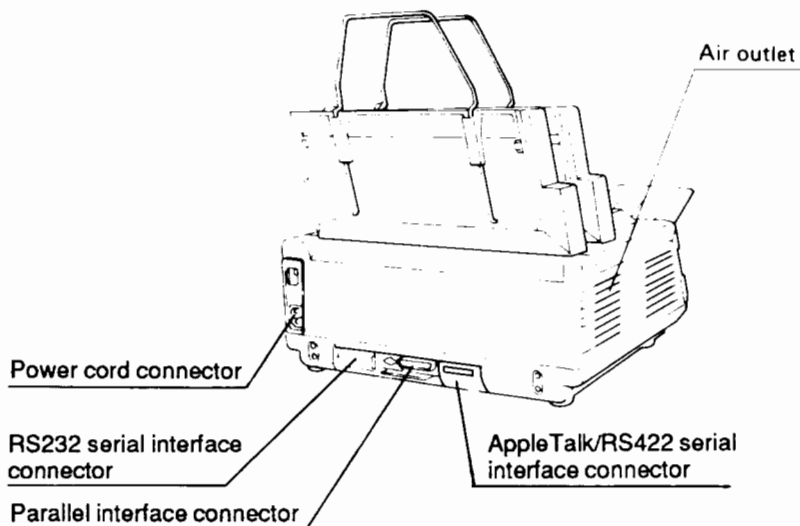


Figure 1-2 Rear and left side views

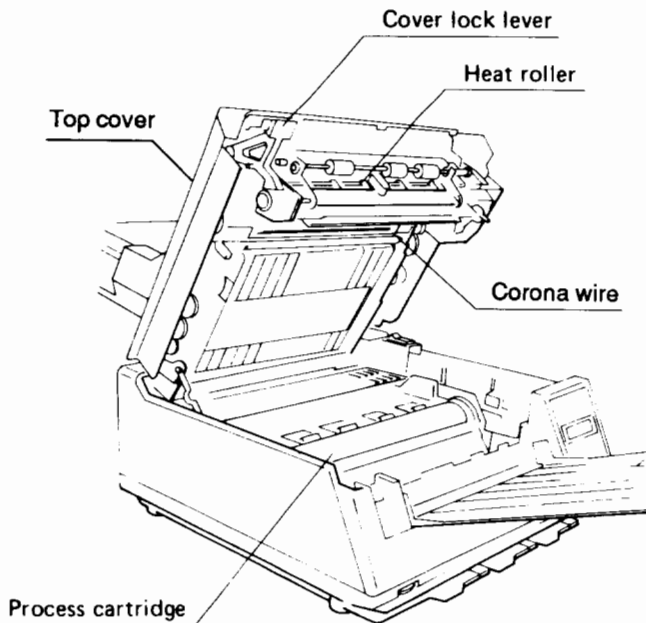


Figure 1-3 Interior view

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SETUP = +
MENU = II

2 Ten Easy Setup Steps

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Introduction

This chapter describes unpacking, installation, and setup procedures for your new printer. It also explains how to print a test page and connect the printer to your computer.

If you are experienced with the setup and use of printers, you can simply refer to the following "Quick Start" chart. While it will be apparent how most pieces should be installed, you can refer to the appropriate sections of this chapter if you need further guidance.

If this is your first page printer, we suggest that you read the Complete Setup Procedures and follow the directions carefully. In addition to ensuring proper setup, this will familiarize you with the printer and its inner workings.

Quick Start Setup Procedures

| Step | Procedure |
|-------------------------|---|
| 1. Find a Good Location | Place on sturdy, level surface in a well-ventilated area. Avoid direct sunlight, high temperatures, high humidity. Don't block air outlet on left side of printer. Use clean, grounded power. Use furnished power cord only – no extension cords. |
| 2. Unpack the RX7100PS | Make sure you received: Printer Process cartridge Corona wire cleaning tool Separator cleaning tool Paper bin(s) Paper support wire(s) Output stacker Power cord User's manual |

| Step | Procedure |
|---|--|
| 3. Install the Process Cartridge | Open the top cover. Rock cartridge to distribute toner. Lower cartridge until it snaps into place. Remove <i>two</i> plastic protective sheets. |
| 4. Install the Heat Roller Cleaning Pad | Open heat roller housing. Install cleaning pad. Close housing. |
| 5. Attach the Output Stacker | Insert pegs in holes in the front of the printer. |
| 6. Install the Paper Bin | Install paper support wire. Position the mounting arms and lower the bin into position. |
| 7. Place Paper in the Bin | Raise paper release lever. Insert paper and adjust side guide. Lower release lever. |
| 8. Connect the Power Cord | Plug one end of cord into back of printer and the other into a wall outlet. Switch the power on. |
| 9. Print a Start Page | Switch offline; press MENU . Press NEXT repeatedly until display reads "PRINT REPORT". Press ENTER . Adjust print density. Press ONLINE . |
| 10. Connect Your Computer | Select interface type from Host I/F menu. Turn power off. Attach cable to parallel or serial interface connector (serial interface may require additional setup described in Chapter 4). |

Complete Setup Procedures

Step 1: Find a Good Location

The first step is to find a suitable location for your printer. For peak performance and usability, follow these guidelines:

- Place the printer on a sturdy, level surface.
- The room should be well ventilated and free of excessive dust.
- Do not put the printer in direct sunlight or near heaters.
- Do not expose the printer to extremes of temperature or humidity. Ideal room temperature is from 50°F to 95°F (10°C to 35°C); humidity should be between 20% and 80% RH.
- Do not block the air outlet from the cooling fan, which is located on the left side near the back of the printer.
- Use a grounded AC power outlet. Do not use a three-pronged adapter in an ungrounded outlet.
- Use the power cord furnished with the printer; do not use an extension cord.
- Do not plug the printer into a circuit that is shared with equipment or appliances that cause electrical noise (such as motors) or use a lot of power (such as copiers or coffeemakers).

Step 2: Unpack the RX7100PS

As you unpack your new printer, check each item carefully for damage. If any damage is found, notify your dealer. The next step is to make sure that you received all the pieces, as shown in Figure 2-1.

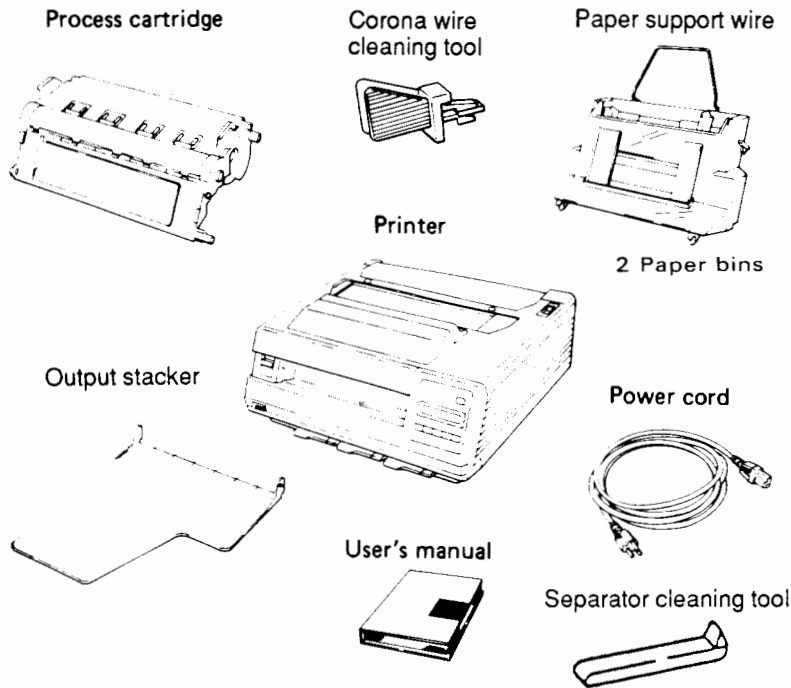


Figure 2-1 Unpacking the printer

Note

Be sure to save the original carton and packing materials in case you need to store or transport your printer.

Step 3: Install the Process Cartridge

The process cartridge consists of a photoconductive drum, developing unit, toner, and drum cleaner in a single module. It is designed to last for approximately 6000 printed pages, although the actual number depends on the size of paper and the print density on each page.

To install the process cartridge, follow these steps:

- a. Open the top cover by pushing up on the cover lock lever and lifting the cover to its open position. Refer to Figure 2-2.

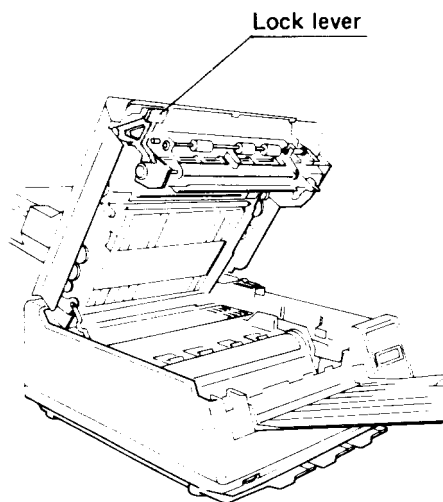


Figure 2-2 Opening the top cover

- b. Remove the packing which protects the LED array, as shown in Figure 2-3.

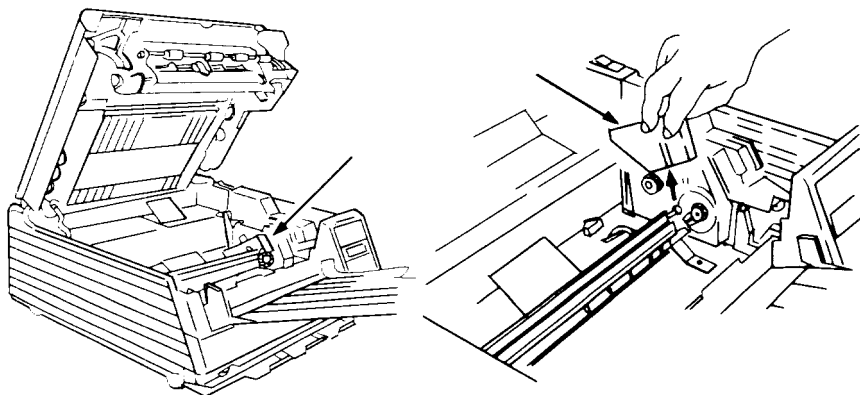


Figure 2-3 Removing LED array packing

- c. Remove the cartridge from its carton and rock it gently as shown in Figure 2-4 to distribute the toner. Rock it from side to side and from front to back.

CAUTION

- Keep the process cartridge in its carton until you are ready to install it in the printer. Exposure to light for more than three minutes could damage the drum.
- Do not touch the green surface of the process cartridge drum. It scratches easily and dirt or oil from your hands can damage it.

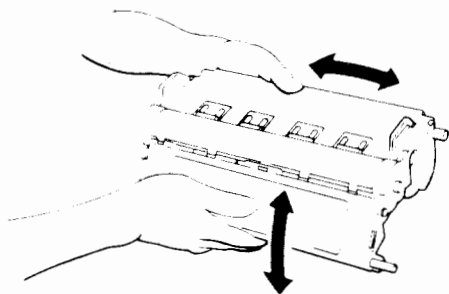


Figure 2-4 Distributing toner in the process cartridge

- d. Hold the process cartridge by its fin-shaped handles and lower it into the printer, making sure that the pins on either side slide down the nylon grooves inside the printer. See Figure 2-5.

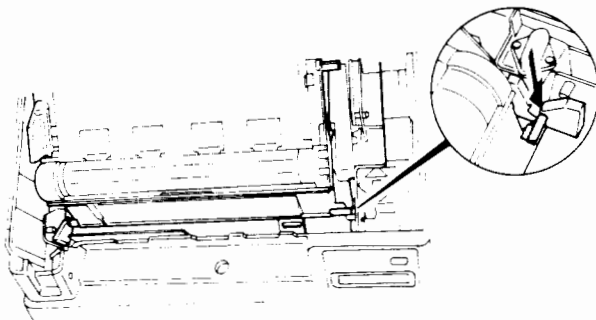


Figure 2-5 Installing the process cartridge

- e. When the pins reach the bottom of the grooves, press down on the handles until both retaining clips snap the process cartridge into its locked position. See Figure 2-6.

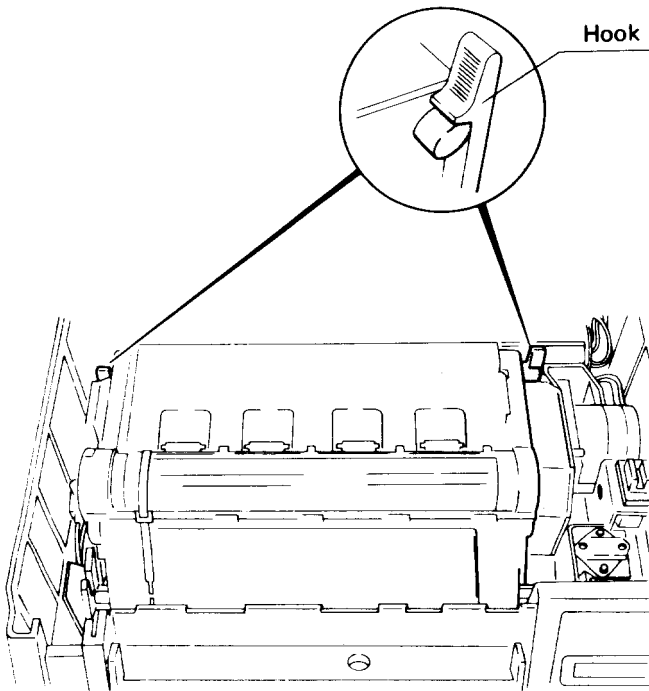


Figure 2-6 Locking the process cartridge into place

- f. The drum is protected by two clear plastic sheets that must now be removed. Simply pull on them one at a time to remove them. The first sheet has a finger hole for easy gripping (see Figure 2-7); the second sheet may require a firm tug to remove it completely.

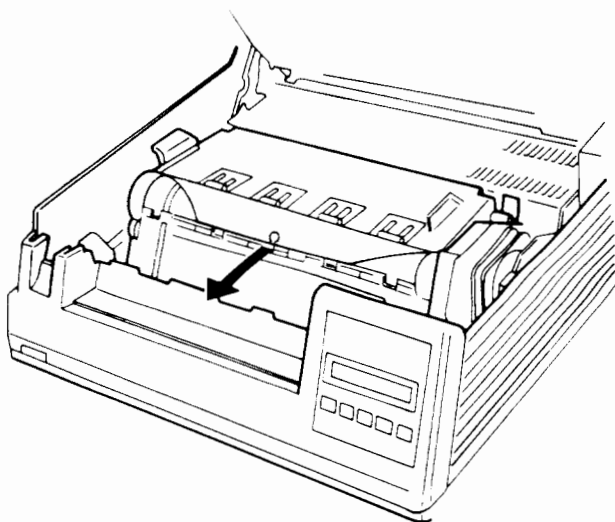


Figure 2-7 Removing the protective sheets

CAUTION

Be sure to remove *both* clear plastic protective sheets from the process cartridge before closing the top cover of the printer. Operating the printer without removing the sheets will cause irreparable damage to the process cartridge.

Step 4: Install the Heat Roller Cleaning Pad

The heat roller cleaning pad is a felt pad with a plastic case. It is packed in the box with the process cartridge. To install the heat roller cleaning pad, follow these steps:

- a. With the top cover open, push up the lock lever of the heat roller housing. The lever is located at the left front of the top cover (see Figure 2-8).

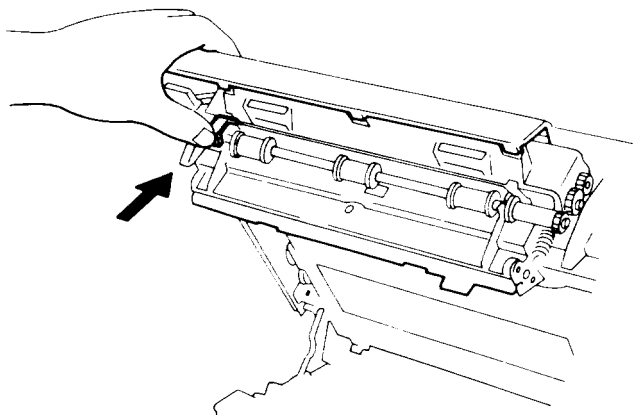


Figure 2-8 Unlocking the cleaning pad compartment

- b. Pull the chrome exit roller shaft towards the front of the printer (see Figure 2-9) until it flips down to expose the slot for the cleaning pad.

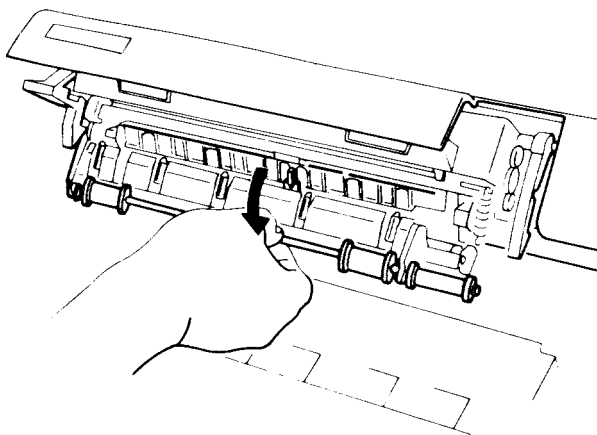


Figure 2-9 Opening the heat roller housing

- c. Place the cleaning pad (with the felt side towards the heat roller) in the housing, as shown in Figure 2-10. The tab near the center should be aligned in the V-shaped groove. Make sure that the pad is firmly seated in the housing.

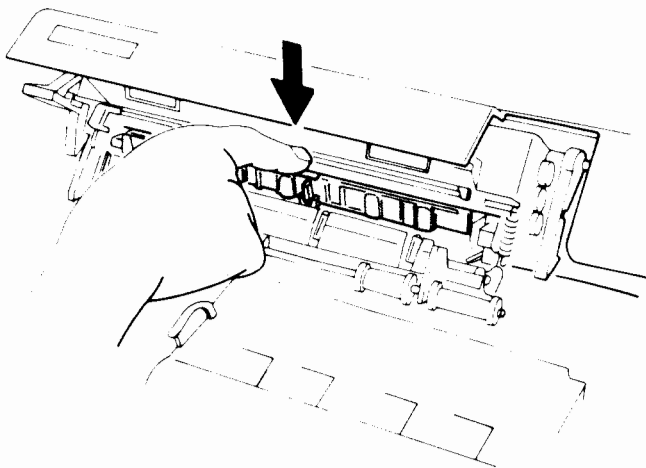


Figure 2-10 Installing the cleaning pad

- d. Tilt the exit roller assembly up as shown in Figure 2-11 and press gently until it snaps shut.

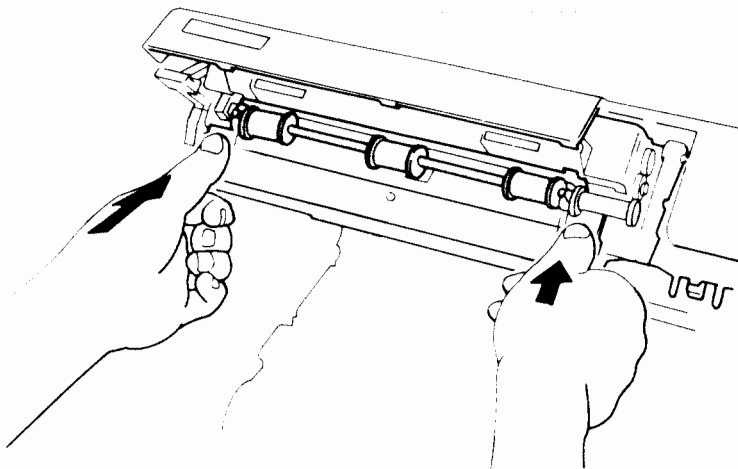


Figure 2-11 Closing the heat roller housing

- e. Now close the top cover by pressing down until it latches.

Step 5: Attach the Output Stacker

The output stacker is the plastic tray that catches the printed sheets. To install it, hold it with the mounting arms up. Insert one peg into the corresponding hole in the printer, then bend the stacker slightly to insert the other peg into the other hole. Refer to Figure 2-12.

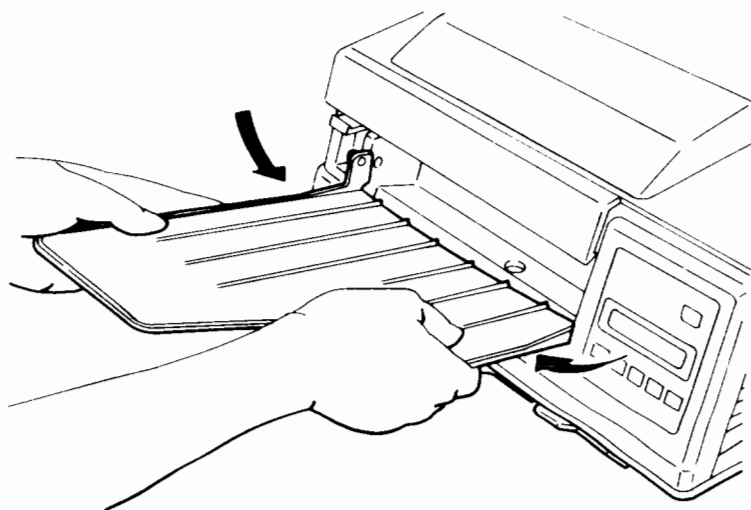


Figure 2-12 Installing the output stacker

Note that the output stacker flips up out of the way when you are not using the printer.

Step 6: Install the Paper Bin

Begin by removing the protective packing in the paper bin. There are four pieces to remove, as shown in Figure 2-13.

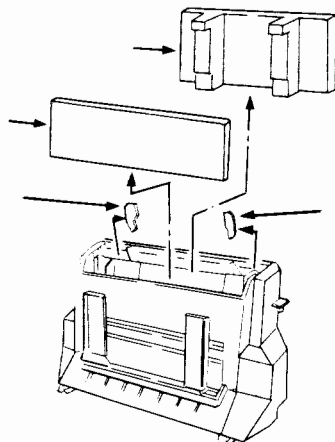


Figure 2-13 Removing packing material from the paper bin

Before you place the paper bin on the printer, install the paper support wire by inserting the ends of the wire into the openings at the top of the bin, as shown in Figure 2-14.

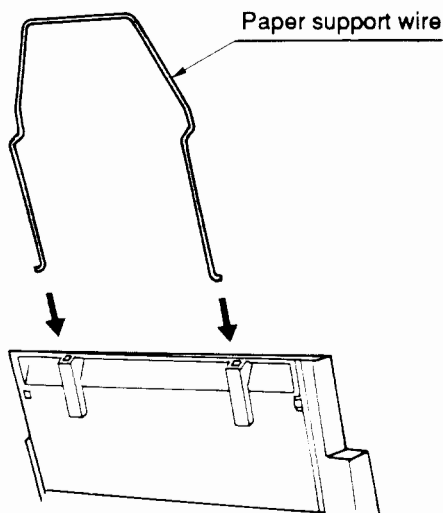


Figure 2-14 Installing the paper support wire in the paper bin

The slot marked "BIN 1" on the top of the printer is for a first paper bin. The slot marked "BIN 2" is for a second paper bin.

- a. With the paper bin tilted slightly towards the front of the printer, place the left and right mounting arms over the corresponding pins in the printer. Refer to Figure 2-15.

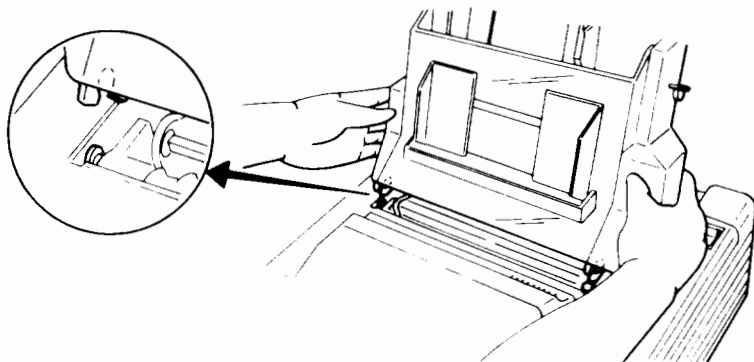


Figure 2-15 Installing the paper bin

- b. Lower the back side of the bin until it is seated flush in the opening in the top of the printer. This will engage the gears that drive the bin's paper feed mechanism.

Step 7: Place Paper in the Bin

The RX7100PS can print on a variety of sizes and types of paper (for more specific information, refer to Chapter 3 and Appendix F). To get started, we recommend that you use standard copier paper: 8-1/2" x 11" 20-pound bond. Start with a stack about one-half inch thick (about 125 sheets).

- a. Raise the paper release lever on the right side of the paper bin to the position marked "OPEN" and slide the movable side guide all the way to the right. See Figure 2-16.

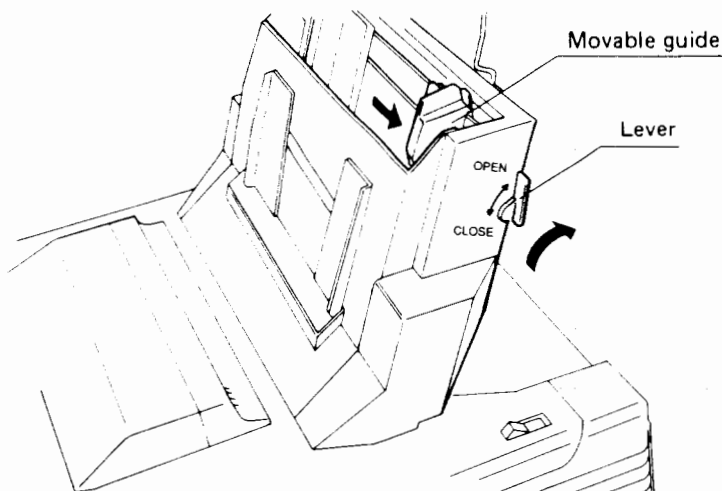


Figure 2-16 Paper release lever

- b. Take the stack of paper and bend it back and forth several times as shown in Figure 2-17 to prevent the sheets from sticking together.

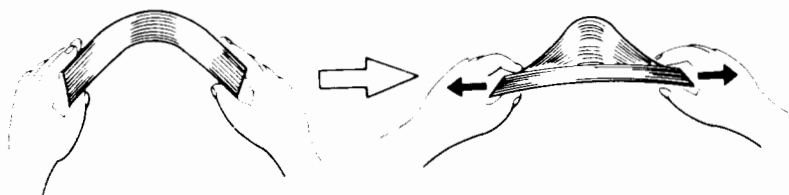


Figure 2-17 Separating the sheets

- c. Place the paper in the bin, pushing it against the left side guide. Adjust the right side guide to the width of the paper (see Figure 2-18). If the paper does not stand straight in the bin, raise the paper support wire.

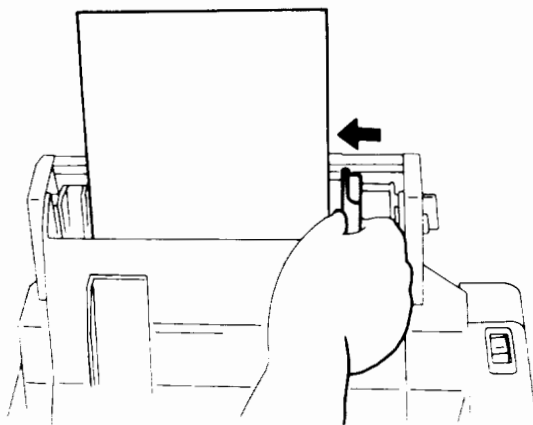


Figure 2-18 Adjusting the side guide

- d. Now lower the paper release lever to the "CLOSE" position.

Step 8: Connect the Power Cord

Before you plug in the printer, make sure that the power switch is turned off (press the side marked "O"). Figure 2-19 shows the power switch.

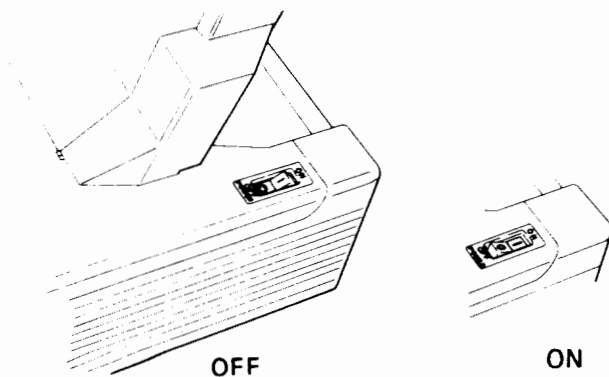


Figure 2-19 Printer power switch

- a. Use the power cord furnished with the printer and plug the female end into the connector in the back of the RX7100PS as shown in Figure 2-20.

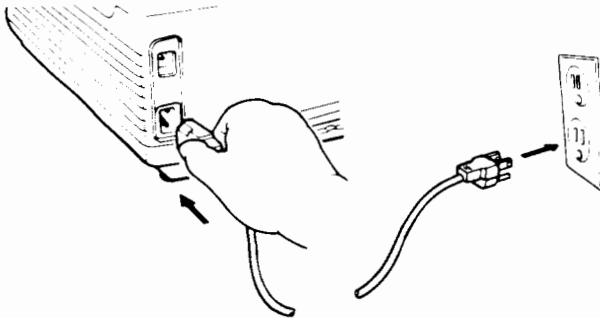


Figure 2-20 Connecting the power cord

- b. Plug the male end into a grounded power outlet (100 to 120 VAC). For your safety, be sure that the outlet is properly grounded. To prevent possible electromagnetic interference or insufficient power, use only the cord furnished with the printer; do not use an extension cord.
- c. Now turn the power switch on. The printer goes through the following warmup procedure, which takes about 1 minute:
 - The POWER indicator is lit.
 - The main motor rotates to initialize the printer and clean the drum.
 - The control panel displays, in succession, "INITIALIZING", "DOING START PAGE", "PRINTING", and "IDLE".
 - A start page is printed. This sheet lists the available fonts, the total number of pages printed by your RX7100PS, and some of the interface parameters. A sample start page is shown in Figure 2-21.

Note

If the default settings for your printer have been changed, the start page may not be printed. Instead, the display will switch directly to "IDLE" following "INITIALIZING". This is not a problem; Step 9A tells how to print a start page. If the control panel displays "ONLINE BIN1" after initializing, then the printer type has been changed to LaserJet. Follow the instructions in Step 9B to print a test report in the LaserJet emulation.

If your printer does not display one of these messages, refer to Chapter 8 for possible causes and solutions.

Step 9A: Print a Start Page (PostScript)

The printer has a test print function that lets you check printer operation and print quality.

- a. Follow these steps to print a start page:

| Press this button | Display | Comment |
|-------------------|--------------|-------------------------------|
| ONLINE | OFFLINE IDLE | Switches the printer offline. |
| MENU | SETUP | Switches to the setup menu. |

Note

When using RX7100PS menus, the labels *below* the buttons describe the button's function. The **MENU** button, for instance, becomes the **NEXT** button when in a menu structure.

NEXT**PRINT REPORT**

Press the **NEXT** button until "PRINT REPORT" is displayed.

ENTER

**DOING START
PAGE
PRINTING**

After a few seconds, a start page will be printed.

The test print should look like the one in Figure 2-21.

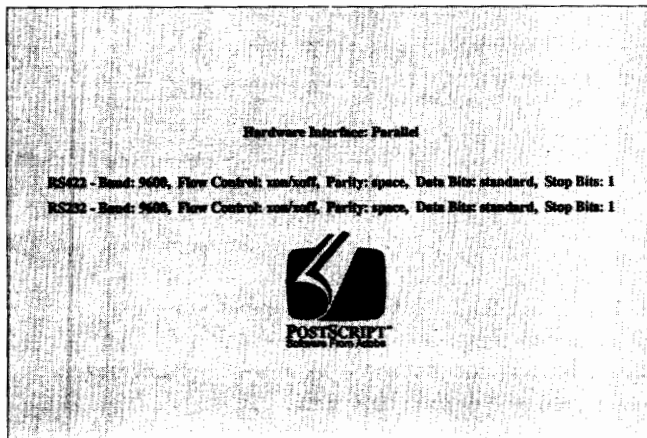
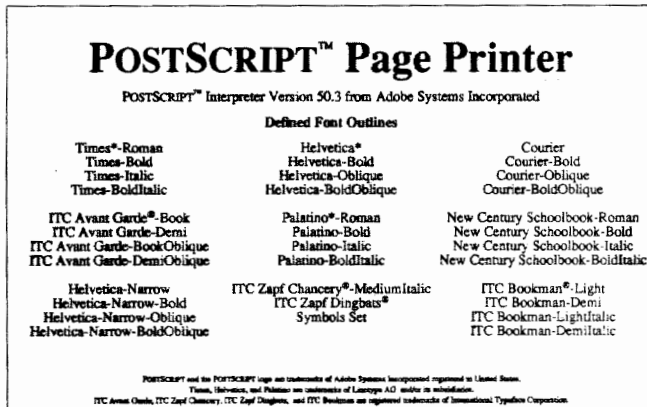


Figure 2-21 Test print (PostScript)

- b. If the test print is too light or too dark, adjust the print density dial as shown in Figure 2-22.

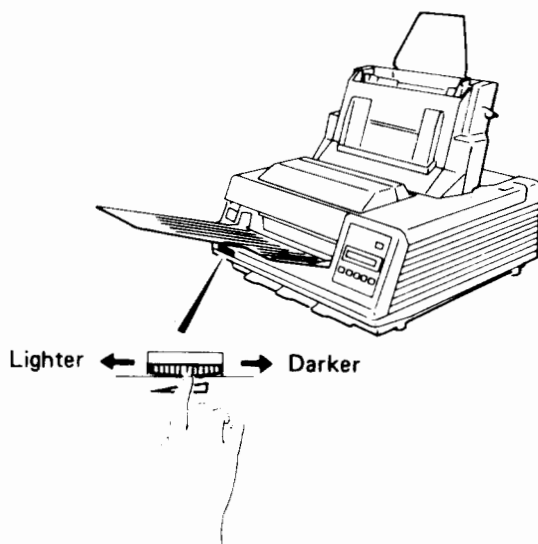


Figure 2-22 Adjusting print density

- c. To print another test page, press the **ENTER** button again. If there is a problem with the printed page other than the print density, refer to Chapter 8.
- d. When you are satisfied with the printed output, you can quit the "PRINT REPORT" function by pressing the **ONLINE** button. The display will then read "IDLE"; you have exited the menu structure.

Step 9B: Print a Start Page (LaserJet)

The printer has a test print function that lets you check the printer's operation and print quality.

- a. Follow these steps to print a test report:

| Press this button | Display | Comment |
|-------------------|--------------|-------------------------------|
| ONLINE | OFFLINE BIN1 | Switches the printer offline. |
| MENU | SETUP | Switches to the setup menu. |

Note

When using RX7100PS menus, the labels *below* the buttons describe the button's function. The **MENU** button, for instance, becomes the **NEXT** button when in a menu structure.

| | | |
|--------------|--------------|---|
| NEXT | PRINT REPORT | Press the NEXT button until "PRINT REPORT" is displayed. |
| ENTER | PRINT REPORT | After a few seconds, a multi-page report will be printed. |

The test print should look like the one in Figure 2-23. It shows all the current menu settings, as well as print samples for each of the available fonts.

----- SET UP REPORT -----

| | | |
|----------------------|---|---------------|
| SELECTED HOST I/F | : | PARALLEL |
| RS-232C I/F SETUP | | |
| Baud rate | : | 9600 BAUD |
| Number of Data bits | : | 8 BITS |
| Number of Stop bits | : | 1 BIT |
| Parity bit | : | MARK |
| Data Flow control | : | DTR |
| RS-422 I/F SETUP | | |
| Baud rate | : | 9600 BAUD |
| Number of Data bits | : | 8 BITS |
| Number of Stop bits | : | 1 BIT |
| Parity bit | : | MARK |
| Data Flow control | : | DTR |
| NUMBER OF COPIES | : | 1 |
| EMULATION | : | LASERJET |
| Version | : | 2 |
| MISCELLANEOUS | | |
| Line Pitch | : | 6 LPI |
| CR code | : | CR ONLY |
| LF code | : | LF ONLY |
| FF code | : | FF ONLY |
| Perforation Skip | : | ON |
| End of Line Wrap | : | OFF |
| SELECTED FONT | | |
| Orientation | : | PORTRAIT FONT |
| Symbol set | : | ROMAN-8 |
| Font name | : | Courier10 |
| SELECTED BIN | : | BIN 1 |
| ERROR BUZZER | : | OFF |
| AVAILABLE EMULATIONS | | |
| LASERJET | : | RESIDENT |
| POSTSCRIPT | : | RESIDENT |

Figure 2-23 Test print (LaserJet)

- b. If the test print is too light or too dark, adjust the print density dial as shown in Figure 2-22.
- c. To print another test report, press the **ENTER** button again. If there is a problem with the printed page other than the print density, refer to Chapter 8.
- d. When you are satisfied with the printed output, you can quit the "PRINT REPORT" function by pressing the **ONLINE** button. The display will then read "ONLINE BIN1"; you have exited the menu structure.

Step 10: Connect Your Computer

You can connect your RX7100PS printer to the computer through any of four interfaces: parallel, serial (RS232 or RS422) or AppleTalk. There are several factors to consider when making your decision:

- **The type of interface your computer has.** Many computers include both a serial and a parallel interface, but you may still be restricted because one of those interfaces is already dedicated to another device. On IBM PCs and compatible computers, the printer is normally connected through the parallel interface. Macintosh computers are usually connected to the AppleTalk link.
- **The distance between the computer and the printer.** Serial communications are recommended if the printer is located at some distance from the computer, which is common in networking and shared-printer configurations. Parallel communications are normally limited to about 10 feet.
- **Communications speed.** You can print faster using the parallel interface than the serial interface, even at its highest transfer rate.

Once you have decided which interface to use, follow the instructions below for selecting an interface and then read the appropriate section which follows.

Selecting an Interface with the Setup Menu

Follow these steps to select the interface you will be using:

| Press this button | Display | Comment |
|-------------------|---|--|
| ONLINE | OFFLINE IDLE | Switches the printer off-line. |
| MENU | SETUP | First option of main menu displayed. |
| ENTER | SOFTWARE | By pressing the ENTER button, you have selected the setup menu. The first option in the setup menu is "SOFTWARE". |
| NEXT | HOST I/F | The NEXT button displays the next option in the setup menu. |
| ENTER | SERIAL RS232* | Pressing ENTER selects the Host I/F function and displays the current setting. If your printer has been configured before, one of the other options may be displayed. |
| NEXT | PARALLEL APPLETALK SERIAL RS422 SERIAL RS232 | Press the NEXT button repeatedly until the desired interface is displayed. When you get to the end of the list, pressing the NEXT button will cycle back to the top again. |

| Press this button | Display | Comment |
|-------------------|-----------------------|--|
| <u>ENTER</u> | SELECTED PARALLEL* | Press the ENTER button to make your selection. "SELECTED" will be displayed briefly to confirm your selection, then the option will be displayed again. (If you selected one of the serial interfaces, you'll enter a sub-menu of serial parameter options. For now, leave them unchanged.) |
| <u>HOME</u> | OFFLINE IDLE | Press the HOME button repeatedly until you leave the menu structure and are in the offline state. |

Now turn off the printer and continue with the section that describes your interface connection.

CAUTION

To prevent possible damage to the computer or the printer, turn off the power to the printer and to the computer when you connect the interface.

AppleTalk

The RX7100PS connects to a Macintosh on an AppleTalk network with LocalTalk connectors. You'll need a LocalTalk Connector Kit with a 9-pin plug (Apple part number M2065) for the RX7100PS and one for the Macintosh (part number M2068 for Macintosh SE; part number M2065 for a Macintosh with a DB-9 connector). The kits include a cable to link the connectors.

To make the connection, slide the interface connector cover on the back of the printer to the left to expose the 9-pin connector. Then plug the LocalTalk connection box into the connector and tighten the thumbscrews to secure the connection. Plug the other LocalTalk connection box into the printer port on the back of your computer. Refer to Figure 2-24.

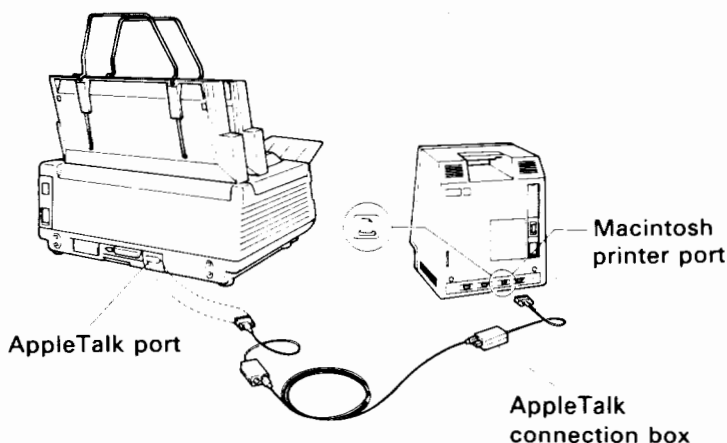


Figure 2-24 Connecting the AppleTalk interface

CAUTION

When operating the RX7100PS connected to AppleTalk, make sure the Host I/F is set to "AppleTalk." If it is set to anything else, it could make the printer inoperable or bring down the AppleTalk network.

If you are using a Macintosh computer with your RX7100PS, there are some additional setup steps required:

- a. Use the Installer (which is found in the Utilities Folder on the System Tools disk furnished with the Macintosh) to install the LaserWriter on each of your startup disks. Instructions for using your version of the Installer can be found in your Macintosh manual.

- b. Start your system and select the Chooser from the Apple menu. Click on the LaserWriter icon (this will mark AppleTalk as active if it wasn't already). A list of page printers on the network will appear in the upper right corner of the window; select RX7100PS to use your new Fujitsu printer.

Parallel Interface

Connecting to the parallel interface port requires a parallel printer cable with a 36-pin male connector (Amphenol 57FE-30360 or equivalent) at the printer end. The type of connector required for the other end depends on your computer. For most IBM PCs and compatibles you'll need a male DB25 connector. Some computers require a 36-pin Centronics connector. Check the user's manual for your computer. To prevent electromagnetic interference, the cable should not be more than 10 feet (3 m) long and the connector cover should be connected to the cable shield.

To make the connection, slide the interface connector cover on the back of the printer to the left to expose the parallel interface connector. Then plug the cable into the connector, and secure it with the wire latches (see Figure 2-25). Plug the other end into your computer's parallel port.

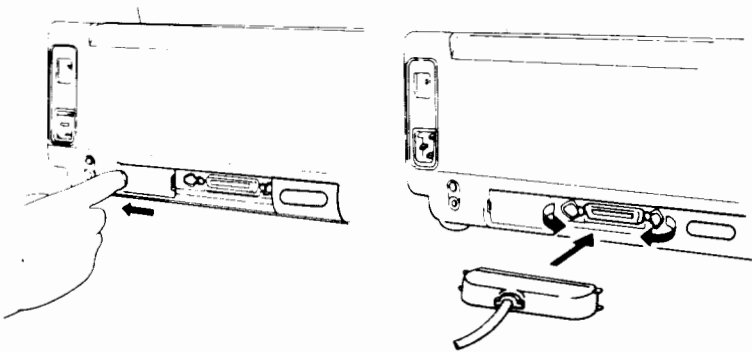


Figure 2-25 Connecting the parallel interface

Serial Interface

Connecting to one of the serial interface ports requires a cable that is wired correctly for the RX7100PS and your computer. The connector for the printer end of the cable must be a male DB25 to use the RS232 interface or a male DB9 for the RS422 interface. The pin assignments are shown in Appendix E. Refer to the user's manual for your computer for information on connector type and pin assignments for the other end of the cable.

To make the connection, slide the interface connector cover on the back of the printer to the right to expose the RS232 serial interface connector; slide it to the left to expose the RS422 connector. Then plug the cable into the connector, and tighten the screws in the cable hood to secure it (see Figure 2-26). Plug the other end into your computer's serial port.

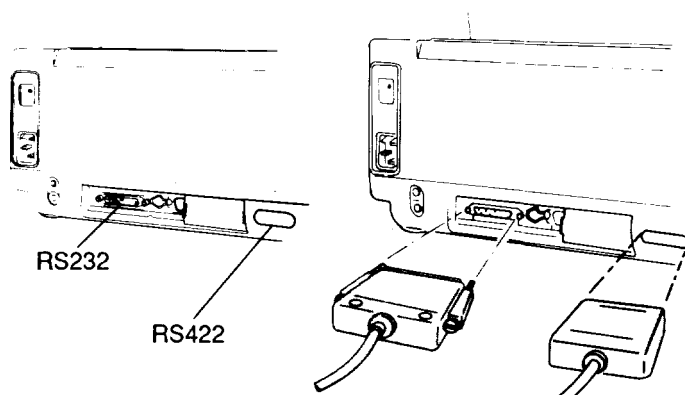


Figure 2-26 Connecting the serial interface

Next, you must make sure that the serial settings are the same for the computer as for the printer. The factory default settings for the RX7100PS are shown in the following table. (If you need to change these settings for the printer, refer to Chapter 4.)

| Setting | PostScript | LaserJet |
|--------------|------------|----------|
| Baud rate | 9600 | 9600 |
| Data bits | 7 | 8 |
| Stop bits | 1 | 1 |
| Parity | Space | None |
| Flow control | XON/XOFF | DTR |

Your computer must have the same settings. Many programs have menus for printer selection, and will allow you to change the serial settings from within the program. If your program doesn't allow you to do this, and you are using an IBM PC or compatible computer running MS-DOS, you will need to enter the following commands:

For PostScript default settings:

```
MODE COM1:9600,N,8,1  
MODE LPT1:=COM1:
```

For LaserJet default settings:

```
MODE COM1:9600,N,8,1,P  
MODE LPT1:=COM1:
```

These commands must be entered at the DOS prompt and the MODE.COM file must be in the current drive and directory (or one named in your PATH command). This will change the settings to match the RX7100PS defaults and specify the serial port for printer output.

Note

To retain these settings after you turn off the computer, these commands should be included in the autoexec.bat file. Refer to your DOS manual for additional information.

Now, try printing something from your computer to confirm that the printer and computer are connected properly. If the printed output is not what you expected, recheck the serial settings at the computer and the printer. If it still doesn't work, ask your dealer or someone experienced in serial communications for assistance.

Selecting a Printer Type

The RX7100PS has the ability to operate like two different types of printers: a PostScript printer and a Hewlett-Packard LaserJet series II printer (other printers can be emulated with optional emulation cards). As the final step in setting up your new printer, you should select which printer type you will use. It is easy to switch printer types at any time using the control panel, so the choice you make now can be changed.

The selection of the printer type will make a difference in the way the control panel operates and the way that software commands from your computer are interpreted. Your choice depends primarily on which type of printer your software supports. In general, software for the Macintosh includes drivers for PostScript (LaserWriter); software for IBM PCs and compatibles usually supports the LaserJet command set. A lot of newer IBM software (particularly desktop publishing and graphics programs) offers PostScript drivers. If the software programs you use support PostScript, you should select it for it offers more resident fonts and more flexibility in printing.

Your new printer is already set for PostScript use. If you need to switch it to the LaserJet emulation, turn on the printer and wait for it to initialize. When the display reads "IDLE", follow these steps:

| Press this button | Display | Comment |
|-------------------|--------------|--------------------------------------|
| ONLINE | OFFLINE IDLE | Switches the printer off-line. |
| MENU | SETUP | First option of main menu displayed. |

| Press this button | Display | Comment |
|-------------------|---|---|
| <u>ENTER</u> | SOFTWARE | By pressing the ENTER button, you have selected the setup menu. The first option in the setup menu is "SOFTWARE". |
| <u>ENTER</u> | POSTSCRIPT* | Pressing ENTER selects the software function and displays the current setting. |
| <u>NEXT</u> | EMULATION | The NEXT button displays the next option in the software menu. |
| <u>ENTER</u> | SELECTED EMULATION* | Press the ENTER button to make your selection. "SELECTED" will be displayed briefly to confirm your selection, then the option will be displayed again. |
| <u>ONLINE</u> | IDLE INITIALIZING WARMING UP ONLINE BIN1 | Press the ONLINE button to return to the online state. When you change from PostScript to the LaserJet emulation (or vice versa), the printer re-initializes – just as if you turned it off and back on. |

3 Printing with the RX7100PS

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Introduction

This chapter discusses everyday operation of your printer. Specifically, you should learn:

- How to understand and use the control panel
- RX7100PS's two operating modes (normal and menu)
- Types of paper that can be used in your printer, as well as how to load paper, select a paper size, and select an input bin
- Issues to consider when using a page printer

The Control Panel

The control panel, shown in Figure 3-1, is the interface between you and the printer. It displays information about the printer's status and allows you to send commands to tell the printer what to do.

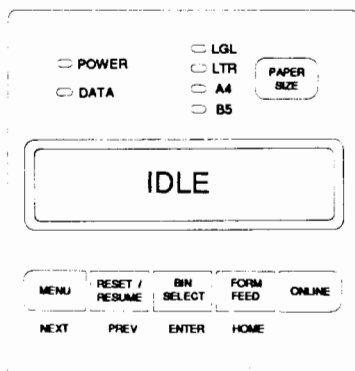


Figure 3-1 RX7100PS control panel

The control panel has two modes of operation: normal and menu. Menu mode is used to select printer features such as line spacing, to set serial parameters, and for other infrequently-used functions. Menu mode is discussed in detail in Chapter 4. This chapter will discuss normal mode, which is what you will use in daily operation.

When you first turn the printer power on, it is in normal mode. To switch to menu mode, make sure the printer is offline, then press the **MENU** button. To return to normal mode, press the **ONLINE** button.

The control panel buttons perform different functions depending on which mode the printer is in. The labels on the buttons are used in normal mode; the labels below the buttons apply in menu mode.

There is no specific indicator to show which mode the printer is in, so you will need to become familiar with the messages displayed in each mode. In this chapter you'll learn the types of messages displayed in normal mode.

The control panel operates differently depending on whether you are using the RX7100PS as a PostScript printer or using its Hewlett-Packard LaserJet series II emulation. In this chapter control panel operation for PostScript and the LaserJet emulation are described separately. You can easily distinguish between these printer types when the RX7100PS is in its normal online condition. In PostScript, the message display will read "IDLE"; in the LaserJet emulation it will read "ONLINE BIN1".

Using the Control Panel (PostScript)

Understanding and using the control panel is quite simple. The control panel has the following components:

- Indicator lights
- Message display
- Buttons

This section will introduce you to each of these components and discuss their use in PostScript's normal mode.

Indicator Lights

The RX7100PS has six indicator lights, which are described in the following table.

| Light | Function |
|------------------------|---|
| POWER | Indicates that printer power is on. |
| DATA | This light is not used with PostScript. |
| LGL LTR A4 B5 | <p>These four lights indicate the size of paper to be used in the current default bin:</p> <ul style="list-style-type: none">■ LGL (legal size) is 8-1/2" x 14"■ LTR (letter size) is 8-1/2" x 11"■ A4 (European letter size) is 210 mm x 297 mm■ B5 (Japanese letter size) is 182 mm x 257 mm <p>If all lights are off, the printer is set for manual feed.</p> |

Message Display

In normal mode, the message display will indicate the following:

- What the printer is doing
- Whether the printer is online or offline
- An error message if there is a problem
- When you should replace the process cartridge

The typical message displayed is "IDLE", informing you that the printer is online and waiting for a job to be sent from the computer.

Note

Online means that the printer is being controlled by the computer. *Offline* means that the printer does not process any jobs, although it continues to receive data into its buffer memory. The printer must be offline to change system parameters with the control panel.

Other normal online operating messages are "PROCESSING" (the printer is executing a job and interpreting data from the computer), "WAITING" (the printer is executing a job, has run out of data, and is waiting for more data from the computer), and "PRINTING" (a page is being printed).

Error messages inform you of a condition that needs your attention, such as "BIN1 PAPER OUT" or "PAPER JAM". Error messages also indicate hardware problems ("FUSER FAILURE" or "FAN FAILURE"). The RX7100PS also notifies you when it's time to replace the process cartridge by displaying "TONER LOW". A complete list of messages displayed in normal mode, along with suggested remedies, can be found in Chapter 8.

Buttons

PAPER SIZE

Selects the paper size to be used for the current bin. This button should be used only when the printer is online and idle (the display will read "IDLE"). Pressing the button repeatedly cycles through each of the available sizes. The selected size for each bin will be saved in memory even after the power is turned off.

MENU

Offline: Switches the printer to menu mode. When you press this button, the display will read "SETUP", which is the first menu in menu mode. (Menu mode is discussed in detail in Chapter 4.)

**RESET/
RESUME**

Online: If the printer is not idle, the display will briefly read "PRINTER BUSY"; no further action is taken. If the printer is online and idle, pressing this button has no effect.

Offline: Pressing this button will initialize the printer (i.e., it clears the buffer memory and resets all settings to the defaults you have saved).

Online: When the printer runs out of paper, it will signal you with an error message (e.g., "BIN1 PAPER OUT"). Refill the bin and then press **RESET/RESUME** to notify the printer that the paper has been replaced.

If the printer is not out of paper and the Allow Job Reset parameter is true (this can be changed in the setup menu or by software command), pressing **RESET/RESUME** will display "FLUSHING JOB..." and terminate the current job. If Allow Job Reset is not enabled then pushing this button will display "WAIT FOR IDLE" and processing will continue. If the printer is online and idle, pressing this button has no effect.

**BIN
SELECT**

Offline: Switches the printer to the bin selection menu, which allows you to specify a paper input bin.

Online: If the printer is not idle, the display will briefly read "PRINTER BUSY"; no further action is taken. If the printer is online and idle, pressing this button has no effect.

**FORM
FEED**

Offline: No effect.

Online: No effect.

ONLINE

Switches the printer from online to offline or vice versa. If you switch offline during printing, the printer will display "PRINTER BUSY" and will stop after printing the current job; any remaining pages in the print buffer will be printed when you switch online again. Pushing the button multiple times while the RX7100PS is printing has the same effect as pushing it once.

Using the Control Panel (LaserJet)

Understanding and using the control panel is quite simple. The control panel has the following components:

- Indicator lights
- Message display
- Buttons

This section will introduce you to each of these components and discuss their use in the LaserJet emulation's normal mode.

Indicator Lights

The RX7100PS has six indicator lights, which are described in the following table.

| Light | Function |
|-------|--|
| POWER | Indicates that printer power is on. |
| DATA | Flashes when data is being sent from your computer. Lights steadily to indicate that there is unprocessed data in the printer's buffer memory. |

| Light | Function |
|------------------------|---|
| LGL LTR A4 B5 | <p>These four lights indicate the size of paper to be used in the current default bin:</p> <ul style="list-style-type: none">■ LGL (legal size) is 8-1/2" x 14"■ LTR (letter size) is 8-1/2" x 11"■ A4 (European letter size) is 210 mm x 297 mm■ B5 (Japanese letter size) is 182 mm x 257 mm <p>If all lights are off, the printer is set for manual feed.</p> |

Message Display

In normal mode, the message display will indicate the following:

- What the printer is doing
- Whether the printer is online or offline
- Which paper bin is selected
- An error message if there is a problem
- When you should replace the process cartridge

The typical message displayed is "ONLINE BIN1", informing you that the printer is online and that bin 1 has been selected as the paper input source.

Note

Online means that the printer is being controlled by the computer. The control panel buttons (except for the **ONLINE** and **PAPER SIZE** buttons) are temporarily disabled. *Offline* means that the printer is effectively disconnected from the computer. It receives commands only from the control panel.

Error messages inform you of a condition that needs your attention, such as "BIN1 PAPER OUT" or "PAPER JAM". Error messages also indicate hardware problems ("FUSER FAILURE" or "FAN FAILURE"). The RX7100PS also notifies you when it's time to replace the process cartridge by displaying "TONER LOW". A complete list of messages displayed in normal mode, along with suggested remedies, can be found in Chapter 8.

Buttons

PAPER SIZE

Selects the paper size to be used. This button can be used in either normal or menu mode, whether the printer is online or offline. Pressing the button repeatedly cycles through each of the available sizes. The selected size for each bin will be saved in memory even after power is turned off.

Note

The **MENU**, **RESET/RESUME**, **BIN SELECT**, and **FORM FEED** buttons are effective only when the printer is offline.

MENU

Offline: Switches the printer to menu mode. When you press this button, the display will read "SETUP", which is the first menu in menu mode. (Menu mode is discussed in detail in Chapter 4.)

Online: No effect.

RESET/ RESUME

Offline: When an error message is displayed, pressing this button will clear the error and allow you to resume printing (if there is no error, pressing **RESET/RESUME** has no effect).

Pressing this button for more than three seconds will initialize the printer (i.e., it clears the buffer memory and resets all settings to the defaults you have saved).

**BIN
SELECT****Online:** No effect.**Offline:** Switches the printer to the bin selection menu, which allows you to specify a paper input bin.**FORM
FEED****Online:** No effect.**Offline:** If there is unprocessed data in the printer (the DATA indicator will be lit in this case), pressing this button will print the unprocessed data. If you press the button again during printing, the printer will stop after printing the current page.**ONLINE****Online:** No effect.

Switches the printer from online to offline or vice versa. If you switch offline during printing, the printer will stop after printing the current page; any remaining pages in the print buffer will be printed when you switch online again. Pushing the button multiple times while the RX7100PS is printing has the same effect as pushing it once.

Paper

This section discusses the types of paper on which you can print, as well as how to select the manual feed slot and print from a second bin.

Types of Paper

The RX7100PS will print on a variety of common office papers in addition to ordinary photocopier bond. Bond paper can range in basis weight from 17 pound to 28 pound. Best print quality will result on smooth paper, but papers with a textured finish usually provide satisfactory results.

Of course, you can also print on pre-printed sheets such as letterheads. Letterheads with thermographic (raised) printing, embossing, or foil stamping may not work well; the same forces which are used to create these effects (heat and/or pressure) are also used in the printer's fuser unit, which may mar the pre-printed image. To load pre-printed paper for printing, place it face down in the paper bin. For portrait-oriented paper, the top edge should be at the bottom; for landscape-oriented paper, the right edge should be at the bottom.

Envelopes should not be printed on the RX7100PS.

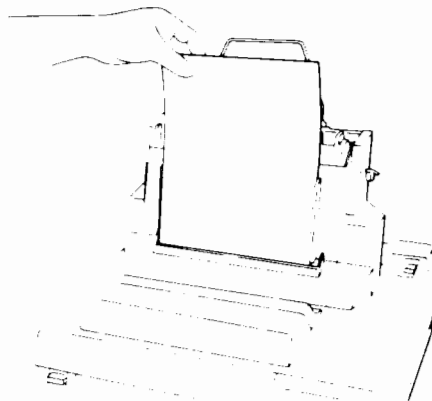
You may also print on overhead transparency material. We recommend that you use materials designed for use in laser printers or photocopiers. The manual feed slot should be used for overhead transparencies.

Using the Manual Feed Slot

In the front of each paper bin is a manual feed slot, which is used for feeding a single sheet of paper (see Figure 3-2). This is useful when printing on overhead transparencies, or when you want to print a document on a different type of paper without unloading your regular paper from the paper bin.

Note

Even though the bins used for bin 1 and bin 2 are identical, only the slot on the front of bin 1 can be used as the manual feed slot. If you insert a sheet in the slot on bin 2, it will cause a paper jam error.

**Figure 3-2 Manual feed slot**

To use the manual feed slot, follow these steps:

| Press this button | Display |
|-----------------------|---------------------|
| ONLINE | OFFLINE IDLE |
| BIN SELECT | BIN 1* |
| PREV | MANUAL |
| ENTER | SELECTED MANUAL* |
| ONLINE | IDLE |

Note

Manual feed is selected from the bin selection menu, which operates exactly like menu mode. In menu mode, the legends *below* the buttons describe their functions. This notation is used in the preceding operation. Menu mode is described in Chapter 4.

The message displays shown in the preceding operation are PostScript messages; the LaserJet emulation messages differ slightly.

The message display will prompt you by showing "INSERT LETTER" (or the size you have specified for the currently selected bin). Insert a sheet of paper with the side to be printed face down, then adjust the paper guide to the width of the paper. After you've printed the first page, the prompt will be redisplayed indicating the printer is ready for the next page.

Selecting a Paper Size

You can use a wide range of paper sizes in the RX7100PS: from a minimum sheet size of 3-15/16" x 5-13/16" (100 mm x 148 mm) for bin 1 (3-15/16" x 9-1/2" (100 mm x 241 mm) for bin 2) to a maximum of 8-1/2" x 14-1/8" (216 mm x 360 mm). The RX7100PS supports four standard paper sizes, which are shown in the following table:

| Paper size | Dimensions |
|------------|-----------------|
| Letter | 8-1/2" x 11" |
| Legal | 8-1/2" x 14" |
| A4 | 210 mm x 297 mm |
| B5 | 182 mm x 257 mm |

By telling the printer the size of paper you will be using, it automatically calculates the proper printing area upon which margin settings are based.

For proper operation, you should tell the printer the paper size loaded in each bin. To inform the printer of the paper size in the current default bin, follow these steps:

- a. Make sure that the printer is in the online idle state (the display will read "IDLE" in PostScript or "ONLINE BIN1" in the LaserJet emulation).
- b. Press the **PAPER SIZE** button repeatedly until the indicator by the appropriate size is lit.

The setting you make here will be retained in the printer's memory even when the power is turned off and back on. The paper size indicator will continue to show the size for the current default bin.

To set the size for the other bin, make it the current default bin (see the next section on "Using Two Bins") and then follow the steps above.

Note

It's important to select the correct size, since the page margins are based on the selected size, not on the actual paper loaded in the printer.

Using Two Bins

If you have installed a second paper bin on your RX7100PS, you can have different types of paper loaded in each bin. Many people use this feature to have plain paper in one bin and letterheads in the other.

The current default bin can be selected from the control panel by switching offline and then pressing the **BIN SELECT** button to reach the bin selection menu. It can also be selected by software command. Most word processing programs allow you to specify which bin you would like to use (some even offer the option of printing the first page from one bin and the remaining pages from another).

Using the bin selection menu is just like using menu mode, which is described in Chapter 4. The bin selection menu offers these choices:

| | |
|-----------|---|
| BIN 1 | Printer feeds paper from bin 1. When the paper runs out, "BIN1 PAPER OUT" is displayed. |
| BIN 2 | Printer feeds paper from bin 2. When the paper runs out, "BIN2 PAPER OUT" is displayed. |
| AUTOMATIC | If both bins have the same size paper and the current bin runs out of paper the printer will automatically switch to the other bin. If both bins run out of paper, or the bins contain paper of different sizes, or only one bin is installed, the paper out message will be displayed. |
| MANUAL | The printer will prompt you to insert a sheet of paper in the manual feed slot. |

LaserJet Page Printer Considerations

The RX7100PS is a page printer. This means that it prints an entire page at a time, instead of just a letter or line at a time like other printers. The fact that the RX7100PS prints a page at a time affects the way it performs some printing functions.

The first difference you will notice is that the RX7100PS doesn't print anything until it has received an entire page from your computer. There are several ways that the RX7100PS knows when the page is complete when using the LaserJet emulation:

- When it receives a form feed command. This is the conventional signal to a printer to advance the paper to the next page.

- When it receives a reset command. The first thing the RX7100PS does when it receives a reset is to print any partial pages it contains.
- When the printing runs off the bottom of the page. If you print past the bottom margin, the RX7100PS will advance the paper to the next page.
- When it receives a command to change orientation from portrait to landscape or vice versa. Since the RX7100PS only prints one direction on a page, it will print any information it contains before it changes orientation.
- When you press the **FORM FEED** button while the printer is off-line.

If you need to send a form feed to the printer, you can do it from your computer. If you are using an IBM PC or compatible computer running MS-DOS, type the following to send a form feed when you are at the DOS prompt:

```
ECHO ^L > PRN
```

"^L" is the symbol for Control-L, which is the form feed command (hold down the **Ctrl** key while pressing the **L** key).

Printing Area and Margins

Page printers have a built-in margin all the way around the page that prevents them from printing to the edge of the paper. In the LaserJet emulation, if you attempt to print past the right margin, the information that would extend past the margin is ignored by the printer. If you print below the bottom margin, the printer will advance to a new page if perforation skip is on, or the information will be ignored if it is off.

The printing areas for the various sizes of paper the RX7100PS can use are shown in the following table.

| Page size | Printing area |
|-----------------------|---------------------|
| Letter (8-1/2" x 11") | 8" x 10-1/2" |
| Legal (8-1/2" x 14") | 8" x 13-1/2" |
| A4 (210 mm x 297 mm) | 203.2 mm x 284.2 mm |
| B5 (182 mm x 257 mm) | 176.1 mm x 244.3 mm |

Most programs you use will set the appropriate margins for you. For programs that do not, or for programs that require you to enter printer commands, refer to Appendix B, where the commands for setting margins are explained.

Orientation

The RX7100PS can print in either portrait or landscape orientation when using the LaserJet emulation. The term landscape is used because many landscape paintings are done in this orientation. The term portrait is used because most portraits are painted in this orientation. Figure 3-3 shows the two types of orientation.

While most of your printing will probably be done in portrait orientation, many programs give you the option of printing in landscape orientation. Landscape orientation is especially useful when you are printing spreadsheets or when you are printing on overhead transparencies. Chapter 5 contains example setup strings that change the orientation.

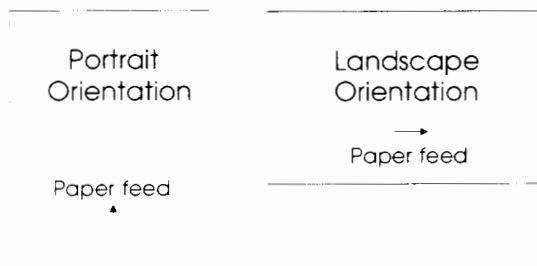


Figure 3-3 Orientation

The Cursor

Conventional computer printers have a printhead that moves across the page, printing characters as it goes. Page printers have no printhead since an entire page is printed at once. Instead, they use an imaginary pointer called the cursor. Although this cursor isn't visible, it acts much like the cursor on your computer screen. It can move anywhere on the page, and the printer will print the next character starting at the cursor's location.

The RX7100PS has commands you can use to move the cursor to change the location where the next information will be printed. These commands are listed in Appendix B.

Default Parameters in LaserJet Emulation

When you turn on the RX7100PS, it is ready to print as soon as it warms up. You don't need to specify a font, line spacing, or any other printer settings. The settings that the RX7100PS uses when it is turned on, or when it receives a reset command, are shown in the following table. Any of these settings can be modified by using the control panel's menu mode or sending commands from your computer. These procedures are explained in Chapters 4, 5, and 6.

| Function | Setting |
|--------------------|-----------------------------|
| Page Layout | |
| Orientation | Portrait |
| Page length | As set by control panel |
| Text length | Installed paper length - 1" |
| Left margin | Column 0 |
| Right margin | Right edge of printing area |
| Line spacing | 6 lines per inch |

| Function | Setting |
|-----------------------|------------------------|
| Font | |
| Orientation | Portrait |
| Symbol set | Roman-8 |
| Spacing | Fixed |
| Pitch | 10 characters per inch |
| Point size | 12 point |
| Style | Upright |
| Stroke weight | Medium |
| Typeface | Courier |
| Other Settings | |
| Carriage return code | CR only |
| Line feed code | LF/FF only |
| End of line wrap | Off |
| Number of copies | 1 |
| Perforation skip | On |
| Automatic bin select | Off |

4 Using Menu Mode

| | |
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1

2

3

4

5

Introduction

Menu mode is used to change printer settings – such as font, page layout, number of copies, and serial interface parameters – and to test printer operation. In this chapter, you should learn:

- Function of control panel buttons in menu mode
- Settings which can be changed, what the available options are, and how to select them
- How to make your selections the power-on default settings

Control Panel Buttons

The control panel buttons take on different functions when you switch from normal mode to menu mode. In menu mode, refer to the label *below* each button instead of the label *on* the button, which is used in normal mode.

Note

To switch from normal mode to menu mode:

Press **ONLINE** to switch the printer offline and then press **MENU** to select the main menu or **BIN SELECT** for the bin selection menu.

To return to normal mode from menu mode:

Press **ONLINE** to leave menu mode and switch on-line again.

NEXT

Moves to the next choice in the current menu. Using the menu flowcharts in this chapter, pressing the **NEXT** button moves down to the next choice. If you are at the bottom of the list, pressing this button will cycle back to the top of the list.

PREV

Moves to the previous choice in the current menu. Using the menu flowcharts in this chapter, pressing the **PREV** button moves up to the previous choice. If you are at the top of the list, pressing this button will cycle to the bottom of the list.

ENTER

Selects the currently displayed choice. This will move you to the next menu (if it is a menu choice) or select the option (if it is an option choice). Using the menu flowcharts in this chapter, pressing the **ENTER** button moves right to the next choice.

HOME

Moves back to the previous menu. Using the menu flowcharts in this chapter, pressing the **HOME** button moves left to the previous choice.

ONLINE

Pressing the **ONLINE** button at any time while in menu mode returns the printer to the online idle state.

Figure 4-1 shows a small portion of the menu mode flowchart and shows how the control panel buttons are used to make a selection.

Menu Mode Example

To get a better understanding of how the menu system works, let's try an example. Refer to Figure 4-1, and we'll demonstrate how to set the RX7100PS so that it will not print a start page each time you turn it on.

Note

The PostScript menus are shown in this example. If you have changed your RX7100PS to HP LaserJet emulation, you'll see a different set of menus. To follow this example, first select PostScript from the software menu.

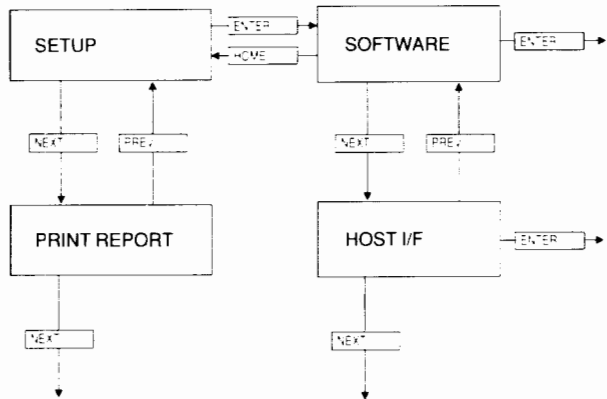


Figure 4-1 Using the control panel buttons in menu mode

Follow these steps:

| Press this button | Display | Comment |
|-------------------|--------------|---|
| ONLINE | OFFLINE IDLE | Switches the printer off-line. |
| MENU | SETUP | Switches to menu mode and displays the first choice from the main menu. |
| ENTER | SOFTWARE | Selects the setup menu and displays the first choice. |

| | | |
|--------------|-----------------|---|
| PREV | MISCELLANEOUS | Pressing the PREV button when the top choice on the menu is displayed moves you to the bottom choice. Alternately, you could have pressed the NEXT button two times to get to the miscellaneous menu. |
| ENTER | ALLOW JOB RESET | Selects the miscellaneous menu and displays the first choice. |
| NEXT | DO START PAGE | Moves to the next item in the miscellaneous menu. |
| ENTER | YES* | Selects the start page menu and displays the first choice. The asterisk indicates that this is the current setting. |
| NEXT | NO | Moves to the next item in the start page menu. Since there are only two items on the menu, pressing the PREV button would also get to this point. |

ENTERSELECTED
NO*

Selects the current choice and saves it in the printer's memory. Notice that the display flashes "SELECTED" and then shows the current choice again – but with an asterisk to indicate that it is the current setting.

ONLINE

IDLE

From any point in the menu structure you can press **ONLINE** to leave the menu and return to the online idle state. If you wanted to check some other settings, you could press the **HOME** button to work back through the menu tree.

Menu
Mode

Menu Mode Reference (PostScript)

The main menu when PostScript is selected offers three options: **setup**, **print report**, and **replace parts**.

Setup Menu

The **setup** menu contains three sub-menus: **software**, **host I/F**, and **miscellaneous**.

Software Menu

The **software** menu allows you to select a printer type. Selecting PostScript makes the RX7100PS a PostScript output device; emulation makes the RX7100PS respond to commands for another printer type (normally the Hewlett-Packard LaserJet series II). Selecting emulation also changes the menu structure; refer to the "Menu Mode Reference (LaserJet)" section of this chapter. The factory default setting is PostScript.

Host I/F Menu

The **host I/F** menu selects which interface to use to communicate with your printer. The choices include two serial interfaces (RS422 and RS232), parallel, and AppleTalk network. The factory default setting is serial RS232.

If you select either of the serial interfaces, you will then see the **baud rate** menu for setting the first of several serial interface parameters. You must be sure that the serial parameters are set the same for both the computer and the printer. Appendix E contains additional information on protocols and the serial interfaces. The factory default settings are 9600 baud, standard data bits (the number of data bits is set automatically by the parity bits), 1 stop bit, space parity, and XON/XOFF protocol.

Miscellaneous Menu

The **miscellaneous** menu allows you to change three functions: **allow job reset**, **do start page**, and **set wait time**.

If **allow job reset** is on, then you can press the **RESET/RESUME** button when a job is active (i.e., the printer display reads "PROCESSING", "WAITING", or "PRINTING") to flush (terminate) the current job. If **allow job reset** is off then you cannot flush a job from the control panel. If a job is active and you press the **RESET/RESUME** button when **allow job reset** is off, the display will read "WAIT FOR IDLE" and will continue processing the job. The factory default setting is on.

The start page is a test page that the RX7100PS normally prints whenever you turn the printer on. It shows the product name and printer name, the version of PostScript running in the printer, the current interface parameters, and the fonts in the printer. (The printer name identifies the printer on AppleTalk. You can change the name, if desired; see your computer's user's guide for instructions.) The start page signals the printer's readiness after warming up and initializing. If you set **do start page** to no, then a start page will not be printed when you turn the printer on. You can still print a start page at any time using the print report option on the main menu. The factory default setting is yes.

Set wait time determines the length of the wait timeout, which limits the time the RX7100PS will wait to receive additional input for a job that is in progress. This is to protect the printer from being tied up indefinitely by a computer that is disconnected while sending a file. This menu allows you to set the wait timeout to 15 seconds, 40 seconds, or infinite (no timeout). The factory default setting is 40 seconds.

Print Report Function

Selecting **print report** causes a start page to be printed. It does not change any settings in the printer's memory.

Replace Parts Function

Selecting the **replace parts** menu following a "TONER LOW" message displays a one-item menu: cartridge. Selecting cartridge resets the printer's internal counter to signal you to change the process cartridge when another 6000 pages have been printed.

Menu Mode Reference (LaserJet)

The main menu when the Hewlett-Packard LaserJet series II emulation is selected offers these options: **setup** menu, **print report**, **copy** menu, **enter hex dump**, **set default**, **save**, and **replace parts** menu. Each of these options is described below.

Setup Menu

The **setup** menu contains three sub-menus: **software**, **host I/F**, and **miscellaneous**.

Software Menu

The **software** menu allows you to select a printer type. Selecting PostScript makes the RX7100PS a PostScript output device; LaserJet makes the RX7100PS respond to Hewlett-Packard LaserJet series II commands. If you have installed an optional emulation card in slot 1, this choice will also appear on the menu. Selecting the emulation also changes the menu structure; refer to the "Menu Mode Reference (PostScript)" section of this chapter or to the manual furnished with the emulation card. The factory default setting is PostScript.

Host I/F Menu

The **host I/F** menu selects which interface to use to communicate with your printer. The choices include two serial interfaces (RS422 and RS232) and parallel (note that AppleTalk is not available when using the LaserJet emulation). The factory default setting is parallel.

If you select either of the serial interfaces, you will then see the **baud rate** menu for setting the first of several serial interface parameters. You must be sure that the serial parameters are set the same for both the computer and the printer. Appendix E contains additional information on protocols and the serial interfaces. The factory default settings are 9600 baud, 8 data bits, 1 stop bit, no parity, and DTR protocol.

If you are going to use the serial interface with the LaserJet emulation, the parameters must be set from the LaserJet menu – not the PostScript menu. The serial parameters for the two printer types are stored independently in the printer's memory.

Miscellaneous Menu

The **miscellaneous** menu allows you to select a font and set other formatting parameters with these sub menus: **font**; **line pitch**; **CR code**; **LF, FF code**; **perforation skip**; **EOL wrap**; **ISO symbol set**; and **error buzzer**.

The **font** menu allows you to select portrait or landscape orientation. After making your selection, the next menu shows each of the available symbol set names for fonts with the specified orientation (if an undefined symbol set is present, its ID number is displayed instead of its name). If there is a Roman-8 font with the specified orientation, the symbol set selected with the **ISO symbol set** menu will be included on the menu. After selecting a symbol set, a third menu shows each available font with the selected orientation and symbol set. The first character in the display indicates the font source (R for resident fonts, 1 for font card 1, 2 for card 2, 3 for card 3, and D for download fonts). The rest of the display shows the font name (the name for download fonts consists of the letters "DL" followed by the font ID number). More information on font attributes can be found in Chapter 6 and Appendix B. The factory default settings are portrait, Roman-8, resident Courier 10.

The **line pitch** menu allows you to set line spacing to 6 lines per vertical inch, 8 lines per inch, or 3 lines per inch. Samples of each of these spacings are shown in Figure 4-2. The factory default setting is 6 lines per inch.

| 6 LPI | 8 LPI | 3 LPI |
|-------|-------|-------|
| ABCD | ABCD | ABCD |
| ABCD | ABCD | |
| ABCD | ABCD | |
| ABCD | ABCD | ABCD |
| ABCD | ABCD | |
| ABCD | ABCD | |
| ABCD | ABCD | ABCD |
| ABCD | ABCD | |

Figure 4-2 Line pitch

The **CR code** menu specifies how the printer acts when it receives a carriage return (ASCII 13) code. As illustrated in Figure 4-3, it can return the cursor to the left margin or it can return to the left margin and move down one line. The factory default setting is CR only.

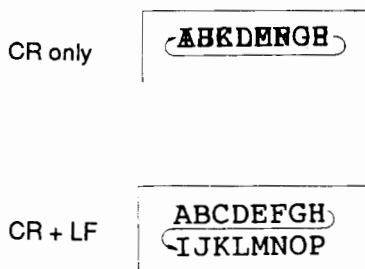


Figure 4-3 CR code

The **LF, FF code** menu specifies how the printer acts when it receives a line feed (ASCII 10) or form feed (ASCII 12) code. As illustrated in Figure 4-4, it can move the cursor down one line or it can move the cursor to the left margin and down one line. The factory default setting is LF only.

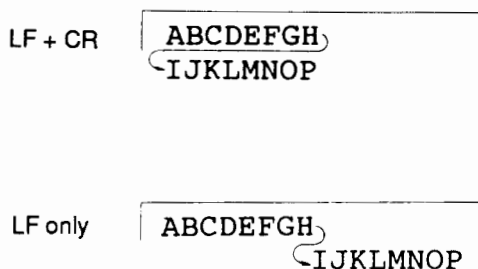


Figure 4-4 LF, FF code

If **perforation skip** is on, then the printer will print the current page and start a new page if it receives any commands that would cause printing in the bottom margin area. Turning perforation skip off allows you to print in the bottom margin area. The factory default setting is on.

End-Of-Line wrap specifies how the printer will act when the cursor reaches the right margin. If **EOL wrap** is on, then the printer automatically inserts a carriage return and line feed when the right margin is reached. If **EOL wrap** is off, printing continues beyond the right margin (and off the page!). The factory default setting is off.

The **ISO symbol set** selection menu allows you to select a default symbol set for inclusion in the **font** selection menu. Symbol sets, which are explained in Chapter 6, are listed in Appendix B.

When **error buzzer** is on and an error occurs, the printer will beep in addition to displaying the error message on the control panel. Switching **error buzzer** off suppresses the beep. The factory default setting is off.

Print Report Function

Selecting **print report** will cause a setup report to be printed (this is not the same as a start page in PostScript). The setup report (a sample is shown in Figure 4-5) shows all of the default menu settings and lists each of the available printer emulations. In addition, a sample of each available font (and a list of its attributes) is shown.

Copy Menu

You can print up to 99 copies of each page by changing the setting of the **copy** menu. Unlike the other functions, the setting of the copy function cannot be saved in the printer's permanent memory with the save function. If you turn the power off and back on, the setting automatically reverts to one copy.

| ----- SET UP REPORT ----- | | |
|---------------------------|---|---------------|
| SELECTED HOST I/F | : | PARALLEL |
| RS-232C I/F SETUP | | |
| Baud rate | : | 9600 BAUD |
| Number of Data bits | : | 8 BITS |
| Number of Stop bits | : | 1 BIT |
| Parity bit | : | MARK |
| Data Flow control | : | DTR |
| RS-422 I/F SETUP | | |
| Baud rate | : | 9600 BAUD |
| Number of Data bits | : | 8 BITS |
| Number of Stop bits | : | 1 BIT |
| Parity bit | : | MARK |
| Data Flow control | : | DTR |
| NUMBER OF COPIES | : | 1 |
| EMULATION | : | LASERJET |
| Version | : | 2 |
| MISCELLANEOUS | | |
| Line Pitch | : | 6 LPI |
| CR code | : | CR ONLY |
| LF code | : | LF ONLY |
| FF code | : | FF ONLY |
| Perforation Skip | : | ON |
| End of Line Wrap | : | OFF |
| SELECTED FONT | | |
| Orientation | : | PORTRAIT FONT |
| Symbol set | : | ROMAN-8 |
| Font name | : | Courier10 |
| SELECTED BIN | : | BIN 1 |
| ERROR BUZZER | : | OFF |
| AVAILABLE EMULATIONS | | |
| LASERJET | : | RESIDENT |
| POSTSCRIPT | : | RESIDENT |

Figure 4-5 Setup report

Enter Hex Dump Function

The hexadecimal (hex) dump function is used primarily for determining why something is not printing the way you expect it to. All codes sent from your computer to the printer – including escape sequences and other printer commands – are printed as two-digit hexadecimal codes. For reference, the printable ASCII characters are also printed on the page. Non-printable codes are shown as periods. A sample hex dump listing is shown in Figure 4-6.

| Count | Hexadecimal dump | | | | | | | | | | | | | | | | ASCII characters |
|--------|------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----------------------------|
| 000000 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 4A | 4B | 4C | 4D | 4E | 4F | 50 | ABCDEFGHIJKLMN |
| 000010 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 5A | 5B | 5C | 5D | 5E | 5F | 60 | OPQRSTUVWXYZ |
| 000020 | 67 | 68 | 69 | 6A | 6B | 6C | 6D | 6E | 6F | 70 | 71 | 72 | 73 | 74 | 75 | 76 | abcdefghijklmnopqrstuvwxyz |
| 000030 | 77 | 78 | 79 | 7A | 7B | 7C | 7D | 7E | 7F | 80 | 81 | 82 | 83 | 84 | 85 | 86 | .. |
| 000040 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 4A | 4B | 4C | 4D | 4E | 4F | 50 | ABCDEFGHIJKLMN |
| 000050 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 5A | 5B | 5C | 5D | 5E | 5F | 60 | OPQRSTUVWXYZ |
| 000060 | 67 | 68 | 69 | 6A | 6B | 6C | 6D | 6E | 6F | 70 | 71 | 72 | 73 | 74 | 75 | 76 | abcdefghijklmnopqrstuvwxyz |
| 000070 | 77 | 78 | 79 | 7A | 7B | 7C | 7D | 7E | 7F | 80 | 81 | 82 | 83 | 84 | 85 | 86 | .. |
| 000080 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 4A | 4B | 4C | 4D | 4E | 4F | 50 | ABCDEFGHIJKLMN |
| 000090 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 5A | 5B | 5C | 5D | 5E | 5F | 60 | OPQRSTUVWXYZ |
| 0000A0 | 67 | 68 | 69 | 6A | 6B | 6C | 6D | 6E | 6F | 70 | 71 | 72 | 73 | 74 | 75 | 76 | abcdefghijklmnopqrstuvwxyz |
| 0000B0 | 77 | 78 | 79 | 7A | 7B | 7C | 7D | 7E | 7F | 80 | 81 | 82 | 83 | 84 | 85 | 86 | .. |
| 0000C0 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 4A | 4B | 4C | 4D | 4E | 4F | 50 | ABCDEFGHIJKLMN |
| 0000D0 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 5A | 5B | 5C | 5D | 5E | 5F | 60 | OPQRSTUVWXYZ |
| 0000E0 | 67 | 68 | 69 | 6A | 6B | 6C | 6D | 6E | 6F | 70 | 71 | 72 | 73 | 74 | 75 | 76 | abcdefghijklmnopqrstuvwxyz |
| 0000F0 | 77 | 78 | 79 | 7A | 7B | 7C | 7D | 7E | 7F | 80 | 81 | 82 | 83 | 84 | 85 | 86 | .. |

Figure 4-6 Hex dump listing

Printer commands have no effect while using the hex dump function. However, the control panel display and buttons operate normally with one exception: pressing the **MENU** button while offline brings up the **hex dump** menu instead of the main menu. The **hex dump** menu offers only two options: **quit hex dump** and **replace parts**.

Quit hex dump returns you to normal operation (turning the power off and back on will also end the hex dump function). The **replace parts** option in the hex dump menu has the same function as the **replace parts** option in the main menu.

Note

Nothing will print until enough data for a full page listing has been sent to the printer. After your program has finished printing, switch the printer offline and press the **FORM FEED** button to print the data remaining in the buffer.

Set Default Function

The **set default** function restores all the settings to the factory default settings. The following table lists the factory default settings.

| Item | Default Setting |
|---------------------|---------------------|
| Host I/F | Parallel |
| RS232C Baud Rate | 9600 bps |
| RS232C Data Bits | 8 bits |
| RS232C Stop Bits | 1 bit |
| RS232C Parity | Mark |
| RS232C Flow Control | DTR |
| RS422 Baud Rate | 9600 bps |
| RS422 Data Bits | 8 bits |
| RS422 Stop Bits | 1 bit |
| RS422 Parity | Mark |
| RS422 Flow Control | DTR |
| Paper bin | Bin 1 |
| Font Orientation | Portrait |
| Font Symbol Set | Roman-8 |
| Font Typeface | Resident Courier 10 |
| Line Pitch | 6 lines per inch |
| CR Code | CR only |
| LF Code | LF only |
| Perforation Skip | On |
| EOL Wrap | Off |
| Error buzzer | Off |

The factory default setting for software is PostScript, but this setting is not affected by the **set default** function.

Save Function

The **save** function is used to store menu settings in the printer's permanent memory. This causes these settings to be effective whenever the power is turned on.

Keep in mind that pressing the **ENTER** button saves the displayed option in temporary memory; these settings are lost when the power is turned off. The **save** function merely takes the current settings and copies them to permanent memory.

Replace Parts Menu

Selecting the **replace parts** menu following a "TONER LOW" message displays a one-item menu: cartridge. Selecting cartridge resets the printer's internal counter to signal you to change the process cartridge when another 6000 pages have been printed.

Menu Mode Flowchart

The flowcharts on the following pages show how the menus are organized. There are three menus: the PostScript main menu, the LaserJet main menu, and the bin selection menu. The first two menus are described in this chapter; the bin selection options are described in Chapter 3. Note that these flowcharts include only the menu options available with the resident emulations. Additional items and options are available with optional emulation cards to make the RX7100PS compatible with the emulated printers. These additional features are described in the documentation furnished with the emulation card.

PostScript Main Menu

```

SETUP ————— SOFTWARE ——— POSTSCRIPT
PRINT REPORT ————— EMULATION

HOST I/F ——— SERIAL RS422 ——— BAUD RATE ——— 300 BAUD
                                           600 BAUD
                                           1200 BAUD
                                           2400 BAUD
                                           4800 BAUD
                                           9600 BAUD
                                           19200 BAUD

                                           DATA BITS ——— STANDARD
                                           7 BITS
                                           8 BITS

                                           STOP BITS ——— 1 BIT
                                           2 BITS

                                           PARITY ——— SPACE
                                           ODD
                                           EVEN
                                           MARK

                                           FLOW CONTROL — XON XOFF
                                           ETX ACK
                                           DTR*
                                           PIN 11 HI*
                                           PIN 11 LOW*

MISCELLANEOUS — ALLOW JOB RESET — ON
                                           OFF

                                           DO START PAGE — YES
                                           NO

                                           SET WAIT TIME ——— 15
                                           40
                                           INFINITE

REPLACE PARTS — CARTRIDGE

```

*These options are available only for the RS232 interface.

LaserJet Main Menu

```

SETUP _____ SOFTWARE _____ POSTSCRIPT
PRINT REPORT _____ LASERJET
                          (stored in emulation card)

HOST I/F _____ PARALLEL
                      SERIAL RS232 _____ BAUD RATE _____ 300 BAUD
                      SERIAL RS422 _____ 600 BAUD
                                              1200 BAUD
                                              2400 BAUD
                                              4800 BAUD
                                              9600 BAUD
                                              19200 BAUD

                      DATA BITS _____ STANDARD
                                              7 BITS
                                              8 BITS

                      STOP BITS _____ 1 BIT
                                              2 BITS

                      PARITY _____ ODD
                                              EVEN
                                              MARK
                                              SPACE

                      FLOW CONTROL _____ DTR
                                              XON/XOFF
                                              ETX/ACK
                                              RC (PIN11 Hi)*

MISCELLANEOUS --- FONT _____ PORTRAIT FONT _____ Symbol set _____ Font source
                      LANDSCAPE FONT _____

                      LINE PITCH _____ PITCH : 6 LPI
                                              PITCH : 8 LPI
                                              PITCH : 3 LPI

                      CR CODE _____ CR : CR ONLY
                                              CR : CR + LF

                      LF, FF CODE _____ LF : LF ONLY
                                              LF : LF + CR

                      PERFORATION SKIP _____ SKIP : ON
                                              SKIP : OFF

                      EOL WRAP _____ EOL WRAP : ON
                                              EOL WRAP : OFF

                      ISO SYMBOL SET _____ Symbol set name

                      ERROR BUZZER _____ BUZZER : ON
                                              BUZZER : OFF

COPY _____ COPY : 01
                      COPY : 99

ENTER HEX DUMP
DEFAULT RESET
SAVE
REPLACE PARTS _____ CARTRIDGE
  
```

*This option is available only for the RS232 interface.

Bin Selection Menu

BIN 1

BIN 2

AUTOMATIC

MANUAL

5 Using Commercial Software

| | |
|---|------|
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| Printer Drivers | 5-2 |
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Introduction

This chapter discusses something you will be doing every day: printing with commercial software.

The following items are explained:

- How to select a printer type
- The different ways software programs communicate with the printer
- How to select the correct printer driver
- How to create a setup string
- How to use embedded printer commands
- Some specific advice for using several different software programs

Selecting a Printer Type

The RX7100PS has the ability to operate like two different types of printers: a PostScript printer and a Hewlett-Packard LaserJet series II (other printers can be emulated with optional emulation cards).

The selection of the printer type will make a difference in the way the control panel operates and the way that software commands from your computer are interpreted. Your choice depends primarily on which type of printer your software supports. In general, software for the Macintosh includes drivers for PostScript (LaserWriter); software for IBM PCs and compatibles usually supports the LaserJet command set. A lot of newer IBM software (particularly desktop publishing and graphics programs) offers PostScript drivers. If the software programs you use support PostScript, you should select it for it offers more resident fonts and more flexibility in printing.

It is easy to switch printer types at any time using the control panel. The procedure for changing types is given in Chapter 4.

Using Software Programs

Software programs communicate with the printer in different ways. Some programs are very sophisticated, and can use all the capabilities of your printer; others only use a few commands to control the printer. The software programs you use fall into one (or more) of the following categories:

- Some programs understand the inner workings of the printer, and can automatically send the proper commands to the printer. This ability is usually built into a subprogram called a printer driver.
- Some programs have the ability to send a command or group of commands to the printer each time they start printing. This group of commands is called a setup string.
- Some programs let you put your own printer commands wherever you want them in a file. These commands in the file are called embedded commands.

These three ways of sending commands to the printer are not mutually exclusive. Programs that use a printer driver don't usually need setup strings or embedded commands, and many times programs that don't use printer drivers have the capability to use both setup strings and embedded commands.

Printer Drivers

Programs that understand the inner workings of the printer can automatically send the proper commands to the printer. This ability is usually built into a sub-program called a printer driver.

There are two ways to recognize programs that use printer drivers. When you install or first use these programs, they usually prompt you for the type of printer you have. Often this is done with an installation or setup program, although sometimes the menu of printer choices is built into the main program.

The other way to recognize them is by the type of printing options they have. If the program has results-oriented options, instead of printer-oriented options, it probably uses a printer driver. For example, a program that has a prompt like "Enter the sheet feeder bin number" probably uses a printer driver, while a program that prompts "Enter the printer codes for the first sheet feeder bin" probably does not use a printer driver.

If your software uses printer drivers, you won't have to learn about the commands that make your printer work. The software does it all for you.

All Macintosh programs use printer drivers. Use the LaserWriter printer driver that comes with the Macintosh and set the RX7100PS for PostScript.

Many IBM PC programs that use printer drivers support both the HP LaserJet series II and PostScript printers.

If you use PostScript, look for either a PostScript printer or the Apple LaserWriter Plus on the menu.

If you use the HP LaserJet series II emulation you should look for this printer on the menu. Some programs have several different drivers for the HP LaserJet printers. Generally, the different drivers are for different combinations of font cartridges. If you use font cards, you will have to study your software manual to determine which printer driver is correct for the font card(s) you use.

Some programs that use printer drivers include:

- All Macintosh programs
- AutoCAD
- Display Write 4
- Framework

GEM
Lotus 1-2-3 (graphics only)
Microsoft Word
Microsoft Works
MultiMate Advantage
PFS:First Publisher
Q&A
Q&A Write
SuperCalc (graphics only)
Symphony
Ventura Publisher
Windows
WordPerfect
WordPerfect Executive
WordStar 2000+
WordStar Professional
XyWrite

Setup Strings

A setup string is a command or group of commands that you define. Your software program sends the commands to the printer each time it starts to print.

Typically, the setup string will contain a reset command to restore the printer to its default condition. It may also contain commands to set the orientation, margins and line spacing, and to select a font. Refer to Appendix B to help you decide which commands to include in your setup string.

Some programs that use setup strings include:

Dac-Easy Accounting
Lotus 1-2-3
SuperCalc
VP-Planner
WordPerfect Executive
WordStar 3.3

Embedded Commands

Software programs that don't understand all the commands of modern printers usually provide a way to put your own printer commands directly into a file. Placing printer commands directly into a file is called embedding the commands in the file.

Embedded commands give you great flexibility; you can literally use all the capabilities of your printer. But you must also use caution when embedding commands. It's easy to get the printer and your software program "out of synch".

For example, if you embed a command to advance to a new page half way down a page of text, the printer will advance to a new page while your program thinks it's still on the previous page. The results may not be what you expected.

The effects can also be more subtle. If you are printing justified text, and you embed a command to change the width of the characters (perhaps by changing the point size) in the middle of a block of text, the lines after the command won't align at the right margin with the lines before the command.

Embedded commands are useful for things like making one line of a spreadsheet bold, but are not recommended for special effects in a word processing program.

Some programs that allow you to embed commands are:

- Lotus 1-2-3
- Microsoft Word
- Sidekick
- SuperCalc
- VP-Planner
- WordStar 3.3

Printer Setup Programs

There are a few programs that don't have built-in printer control capabilities and won't allow you to embed commands. If you use this type of program, you can still exploit the capabilities of your printer by using printer setup programs.

These programs are designed to send commands to your printer before or during execution of another program, allowing you to use some of the printer commands that your regular program can't.

You may want to check the following setup programs:

- LaserControl
- Printworks for Lasers
- RAM Resident Printmerge

Remember, you can use the RX7100PS's control panel to select manual feed, set the number of copies, select a font, and set the number of lines to print on a page.

Using Macintosh Applications

If you are using a Macintosh computer with your RX7100PS you should be using PostScript.

Use the Installer (which is found in the Utilities Folder on the System Tools disk furnished with the Macintosh) to install the LaserWriter on each of your startup disks. Instructions for using your version of the Installer can be found in your Macintosh manual.

Start your system and select the Chooser from the Apple menu. Click on the LaserWriter icon (this will mark AppleTalk as active if it wasn't already). A list of page printers on the network will appear in the upper right corner of the window; select RX7100PS to use your Fujitsu printer.

Application Tips for IBM PC Programs

This section provides some guidance with specific IBM software programs. The following is a key to the information in this section:

- | | |
|--------------------------|---|
| Printer support | This tells whether the program uses printer drivers, setup strings, embedded commands, or a combination of these. |
| Printer selection | This tells how to select the correct printer driver or printer type. |
| Helpful tips | This gives hints on using the particular program. |

Lotus 1-2-3

| | |
|------------------------|---|
| Printer support | Printer drivers, setup strings, and embedded commands. Supports the HP LaserJet and, with the Value Pack, PostScript. |
|------------------------|---|

| | |
|--------------------------|---|
| Printer selection | Use the INSTALL program. Select HP LaserJet or PostScript for both a text and graphics printer. |
|--------------------------|---|

| | |
|---------------------|--|
| Helpful tips | You can use the /Print Printer Options menu to change the report format. |
|---------------------|--|

If you are using the HP LaserJet emulation, you can use setup strings with the /Print Printer Options Setup command.

To print with the Line Printer font, use this setup string:

\027E\027&k2S

You can embed commands into the first cell in a row. If there are no other entries in that row, 1-2-3 will execute the command but won't print the row. Precede the command with two vertical rule characters (||). To underline one row in a spreadsheet, enter this in the row above it:

||\027&dD
and enter in the row below it:
||\027&d@

Microsoft Word

- | | |
|--------------------------|--|
| Printer support | Printer drivers. Supports both HP LaserJet and PostScript. With HP LaserJet, match the printer driver to the font cartridges or soft fonts you are using. |
| Printer selection | Use the SETUP program or the Print Options menu. |
| Helpful tips | Use the Format Character menu to set font characteristics. Use the Format Division menus to set page format. Use the Format Paragraph menu to set paragraph style. |

MultiMate Advantage

- | | |
|--------------------------|---|
| Printer support | Printer drivers, called Printer Action Tables or PAT files. There are several for the HP LaserJet, none for PostScript. |
| Printer selection | Use the Print Parameters for Document screen. |
| Helpful tips | See the <i>MultiMate Advantage II Printer Guide</i> for more information on the fonts supported. |

PageMaker and Windows Application Programs

Printer support Printer drivers. Supports both PostScript and HP LaserJet with cartridges and soft fonts.

Printer selection Use the INSTALL program or the Printer command on Windows' Control Panel.

Helpful tips You can download the PostScript prologue file to the printer before you start using PageMaker, saving the time required to download this file each time you print. See the "Using PostScript printers" section of the *PageMaker Installation Guide* for information on how to do this.

If you use downloadable soft fonts, download the ones you use frequently as "permanent" fonts. Permanent fonts remain in the printer until it is turned off. This saves the time required to download the fonts each time you print. See the "Using PCL Printers" section of the *PageMaker Installation Guide* for information on how to do this.

Symphony

Printer support Printer drivers, setup strings, and embedded commands (worksheet only).

Printer selection Use the INSTALL program. Select HP LaserJet for both a text and graphics printer.

Helpful tips Put a setup string on the default Printer Settings Sheet. Use the Configuration Printer option on the Services menu. The following setup string resets the printer, clears the top and bottom margins, and turns off perforation skip. This lets Symphony use its margins.

\027E\027&leL

In a worksheet, you can embed commands into the first cell in a row. If there are no other entries in that row, Symphony will execute the command but won't print the row. Precede the command with two vertical rule characters (||). To underline one row in a spreadsheet, enter this in the row above it:

||\027&dD

and enter in the row below it:

||\027&d@

Ventura Publisher

Printer support Printer drivers. Supports both PostScript and HP LaserJet printers.

Printer selection Use the VPPREP program or the Printer Info menu.

Helpful tips You can download the PostScript prologue file to the printer before you start using Ventura, saving the time required to download this file each time you print. See the "Printer Information" section of the *Xerox Ventura Publisher Edition Reference Guide* for information on how to do this.

Download soft fonts you use frequently as "Permanent" fonts, which remain in the printer until it is turned off. This saves the time required to download the fonts each time you print. See the "Printer Information" section of the *Xerox Ventura Publisher Edition Reference Guide* for information on how to do this.

WordPerfect

- Printer support** Printer drivers. Supports the HP LaserJet. Match the printer driver to the font cartridges you are using.
- Printer selection** Use the Printer Control Menu (press Ctrl-F8).
- Helpful tips** Print the FONT.TST and PRINTER.TST documents to see what fonts the printer driver you selected supports.

6 Using Fonts

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| Resident Fonts | 6-2 |
| Card Fonts | 6-3 |
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| Orientation | 6-6 |
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Introduction

A font is a set of printable characters that have the same size and style. A font comprises a complete character set: letters of the alphabet (uppercase and lowercase), numbers, punctuation, and other symbols. Some sample fonts are shown in Figure 6-1.

| | |
|-----------------------------|--|
| Courier | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 0123456789<>?,./;':"[]{}% |
| TmsRmn compatible | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 0123456789<>?,./;':"[]{}% |
| Helv com- patible Italic | <i>ABCDEFGHIJKLMNOPQRSTUVWXYZ</i> <i>abcdefghijklmnopqrstuvwxyz</i> <i>0123456789<>?,./;':"[]{}%</i> |

Figure 6-1 Font samples

You can use different fonts on the RX7100PS for emphasis, to distinguish between headlines and body copy, or simply for graphic appeal. Choosing the appropriate fonts makes your documents readable, attractive, and professional looking.

The following topics are discussed in this chapter:

- The types of fonts you can use with the RX7100PS: resident fonts, card fonts, and soft fonts
- How to select a font with software
- The characteristics that describe a font – its attributes
- How to select a font with the control panel

Available Fonts

There are three types of fonts that can be used with the RX7100PS: resident fonts, card fonts, and soft fonts.

Resident Fonts

Resident fonts are stored in the RX7100PS's permanent memory and are always available for use. Using the RX7100PS as a PostScript device allows the use of thirty-five fonts, which are shown in Figure 6-2. Subject only to the limitations of your software, these fonts can be printed in any size and orientation. Each of the fonts shown is proportionally spaced, except for the Courier family.

| | |
|--|---|
| Avant Garde Gothic Book | Helvetica Narrow Bold |
| <i>Avant Garde Gothic Book Oblique</i> | <i>Helvetica Narrow Bold Oblique</i> |
| Avant Garde Gothic Demi | Bookman Light |
| <i>Avant Garde Gothic Demi Oblique</i> | <i>Bookman Light Italic</i> |
| New Century Schoolbook Roman | Bookman Demi |
| <i>New Century Schoolbook Italic</i> | <i>Bookman Demi Oblique</i> |
| New Century Schoolbook Bold | Palatino Roman |
| <i>New Century Schoolbook Bold Italic</i> | <i>Palatino Italic</i> |
| Courier | Palatino Bold |
| Courier Bold | <i>Palatino Bold Italic</i> |
| <i>Courier Oblique</i> | Times Roman |
| <i>Courier Bold Oblique</i> | Times Bold |
| Helvetica | <i>Times Italic</i> |
| Helvetica Bold | <i>Times Bold Italic</i> |
| <i>Helvetica Oblique</i> | Symbol |
| <i>Helvetica Bold Oblique</i> | <i>Zapf Chancery Medium Italic</i> |
| Helvetica Narrow Medium | Zapf Dingbats |
| <i>Helvetica Narrow Medium Oblique</i> | |

Figure 6-2 PostScript fonts

The RX7100PS comes standard with six resident fonts in the LaserJet emulation, whose attributes are shown in the following table:

| | | | |
|----------------------|---|---|---|
| Orientation | Portrait & Landscape | Portrait & Landscape | Portrait & Landscape |
| Symbol set | Roman-8 USASCII Roman-Ext. PC-8 PC-8 (D/N) ECMA-94 | Roman-8 USASCII Roman-Ext. PC-8 PC-8 (D/N) ECMA-94 | Roman-8 USASCII Roman-Ext. PC-8 PC-8 (D/N) ECMA-94 |
| Spacing | Fixed | Fixed | Fixed |
| Pitch | 10 cpi | 10 cpi | 16.66 cpi |
| Point size | 12 pt | 12 pt | 8.5 pt |
| Style | Upright | Upright | Upright |
| Stroke weight | Medium | Bold | Medium |
| Typeface | Courier | Courier | Line Printer |

Card Fonts

Additional fonts stored on credit card-size IC cards can be purchased from your Fujitsu dealer. Up to three font cards can be installed in your printer at any time, enabling a variety of character styles to be printed.

A list of font cards available at the time of printing is included in Appendix F. Notice that there are different cards for use with either the PostScript or LaserJet emulations. PostScript fonts cannot be used in the LaserJet emulation; the converse is also true. Check with your Fujitsu dealer for an updated list.

The slots where font cards should be installed are located in the front of the printer near the bottom (see Figure 6-3). To install a font card, switch the printer offline. Hold the card with the label up and insert the end with the connectors into one of the slots until it clicks into place. Switch the printer back to online.

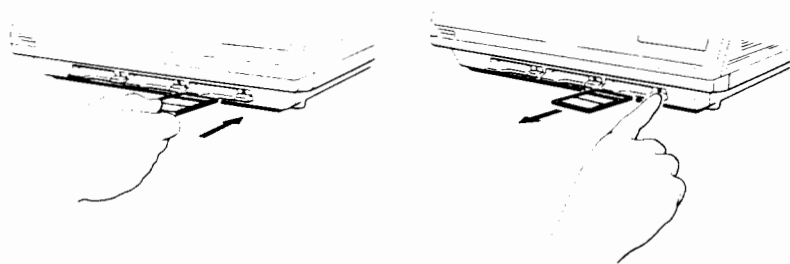


Figure 6-3 Installing and removing a font card

Note

If you are using an emulation card, it must be installed in slot 1 (the leftmost slot). Slots 2 and 3 are still available for font cards.

To remove a font card, switch the printer offline, press the eject button to the right of the slot and the card will pop out.

Soft Fonts

Soft fonts (or download fonts) are stored on a disk in your computer and then downloaded to the printer's memory when you want to use them. They are stored in the printer's memory until you send a command to erase them from memory or turn the power off.

There is a wide variety of download fonts available in the computer marketplace. These fonts allow you to use typefaces and sizes that are not available on font cards. When you purchase soft fonts, make sure they are compatible with the following:

- **Your software.** Word processors and other programs need to know the height and width of each character to format text properly. Some fonts are furnished with drivers for major software programs.

- **PostScript or HP LaserJet.** In its standard configuration, the RX7100PS is a PostScript output device; downloadable PostScript fonts will work with the RX7100PS. Alternately, you can configure the RX7100PS so that it emulates the HP LaserJet series II; fonts and font programs designed for that printer will work on the RX7100PS.

There are some other things to consider when you use soft fonts. Because each font occupies a part of the printer's memory, that memory can't be used for anything else (e.g., other download fonts). Therefore, you should only download the fonts you need rather than downloading all your fonts every time you print.

Selecting Fonts in PostScript

When using the RX7100PS as a PostScript printer, fonts are selected by commands from your software program. For specific information, consult your program's user manual.

If you are using a Macintosh, fonts are selected from the Font menu of each application. The standard Macintosh font menu does not include all of the fonts available on the RX7100PS. To access the additional fonts, you need to use the Font/DA Mover to install LaserWriter screen fonts, which are the screen versions of the RX7100PS resident fonts. A disk containing the LaserWriter and LaserWriter Plus screen fonts, along with instructions for installing them, is available from your dealer.

If you do not have the LaserWriter screen fonts, you can utilize *font substitution* to access some of the RX7100PS fonts. To do this, open the Chooser and select Page Setup from the File menu. Check the Font Substitution option and click OK. This will substitute RX7100PS resident fonts for Macintosh fonts, as shown below:

| Macintosh font | RX7100PS font |
|----------------|---------------|
| New York | Times Roman |
| Geneva | Helvetica |
| Monaco | Courier |
| Seattle | Helvetica |

If you do not use font substitution, the RX7100PS will print the Macintosh fonts (such as New York and Chicago), but they take longer to print than the resident fonts.

Font Attributes (LaserJet)

The following attributes are used to describe each font when using the LaserJet emulation on the RX7100PS:

- Orientation (portrait or landscape)
- Symbol set (Roman-8, PC-8, etc.)
- Spacing (fixed or proportional)
- Pitch (character width)
- Point size (character height)
- Style (upright or italic)
- Stroke weight (light, medium, or bold)
- Typeface (Courier, Line Printer, etc.)

Each of these attributes is discussed in this section.

Note

These terms describe attributes of fonts when using the Hewlett-Packard LaserJet emulation. However, even if you are using the RX7100PS as a PostScript printer, it may be helpful to read this section to learn more about fonts.

Orientation

Characters can be printed in either of two orientations: portrait or landscape. Figure 6-4 shows the two orientations.

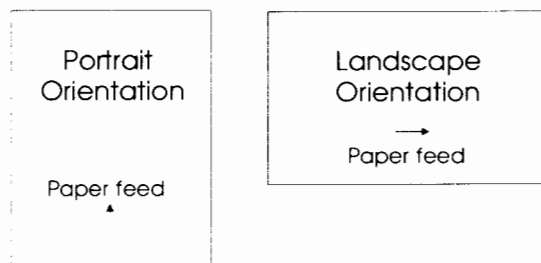


Figure 6-4 Orientation

Symbol Set

A symbol set is a particular collection of letters, numbers, and symbols, each one referenced by a unique code sent to the printer. In some cases, the same symbols are available in different symbol sets; the only difference is the numeric code associated with each character.

The RX7100PS has a variety of special symbols and foreign language characters available in addition to the standard letters and numbers. The standard LaserJet symbol set in the RX7100PS is called Roman-8, which is shown in Appendix C. PostScript fonts use a different symbol set, which is also shown in Appendix C.

Spacing

Fonts are either monospaced (fixed pitch) or proportionally spaced. In a monospaced font, each printed character has the same width. This is typical of typewritten or computer-printed text. Each of RX7100PS' resident LaserJet fonts is a monospaced font.

In a proportional font, wide characters (such as W or M) occupy more space than narrow characters (such as i or l). All of the PostScript fonts (except the Courier family) as well as many card fonts and soft fonts are proportionally spaced (sometimes abbreviated PS).

Figure 6-5 shows the two types of spacing.

| | |
|-------------------------|--|
| Monospacing | ABCDEFGHIJKLMNOPQRSTUVWXYZ Fujitsu RX7100PS Printer!! |
| Proportional spacing | ABCDEFGHIJKLMNOPQRSTUVWXYZ Fujitsu RX7100PS Printer!! |

Figure 6-5 Spacing

Pitch

Pitch indicates the number of characters per horizontal inch, and applies only to monospaced fonts. The resident RX7100PS Courier font prints at 10 characters per inch, so it is described as a 10 pitch font. Figure 6-6 shows examples of font pitches.

| | |
|----------|--|
| 8 pitch | A B C D E F G H I J K L M N O P a b c d e f g h i j k l m n o p |
| 10 pitch | A B C D E F G H I J K L M N O P Q R S T U a b c d e f g h i j k l m n o p q r s t u |
| 12 pitch | A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z |

Figure 6-6 Pitch

Point Size

Point size describes the height of the characters from the top of the capital letters to the bottom of the descenders in letters such as p and j. It is measured in points, a typesetter's unit of measure which is 1/72 inch. Figure 6-7 shows examples of point sizes.

| | |
|----------|--|
| 8 point | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz |
| 12 point | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz |
| 14 point | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz |

Figure 6-7 Point size

Style

There are two font styles available: upright and italic. Figure 6-8 shows examples of the two styles.

| | |
|---------|--|
| Upright | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz |
| Italic | <i>ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz</i> |

Figure 6-8 Style

Stroke Weight

Stroke weight describes the thickness of the lines comprising the characters. Some fonts are available in several different weights: light, medium (regular), and bold. Most are available as medium and bold. Figure 6-9 shows examples of weights.

| | |
|---------|--|
| Regular | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz |
| Bold | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz |

Figure 6-9 Stroke weight

Typeface

Typeface refers to a particular design or "family" of font. Courier and Line Printer typefaces are resident fonts in the RX7100PS' LaserJet emulation; thirty-five fonts are resident in PostScript mode. Many other typefaces are available on font cards and as downloadable soft fonts. A few samples are shown in Figure 6-10.

| | |
|----------------------|--|
| Courier | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz |
| Line Printer | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz |
| TmsRmn compatible | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz |
| Helv compatible | ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz |

Figure 6-10 Typeface

Selecting Fonts in LaserJet Emulation

Fonts can be selected with the control panel or with printer commands sent from your computer.

When you turn on the RX7100PS power, the default font will be used for printing. The default font is the factory default (Courier portrait) unless you have selected another font in menu mode and saved your setting. The two methods for changing this selection are explained in the following sections.

Using the Control Panel to Select a Font

The control panel can be used to select any of the resident fonts, card fonts, or soft fonts currently loaded in the printer. To select a font, follow these steps:

| Press this button | Display | Comment |
|-------------------|---------------|---|
| ONLINE | OFFLINE BIN1 | Switch offline. |
| MENU | SETUP | Enter menu mode. The first option of the main menu is displayed. |
| ENTER | SOFTWARE | Select the setup menu. The first option is displayed. |
| PREV | MISCELLANEOUS | |
| ENTER | FONT | Select the miscellaneous menu. The first option is "FONT". |
| ENTER | PORTRAIT FONT | The first choice to make after selecting the font menu is orientation. Press NEXT or PREV to toggle between portrait and landscape; when the desired orientation is displayed, press ENTER . |

| | | |
|---------------|--------------------------|--|
| ENTER | ROMAN 8 | Now you must select a symbol set. Use the NEXT and PREV buttons to scroll through the list of available sets. If you are unsure which one to use, select Roman-8 (which is the normal set used on LaserJet printers) or PC-8 (which matches the IBM-PC character set). |
| ENTER | R: COURIER10 | Now you can select a font source (resident, card, or download) and font. The NEXT and PREV buttons will cycle through all of the available choices. |
| ENTER | SELECTED R: COURIER10 | |
| ONLINE | ONLINE BIN1 | Leave menu mode and return to online condition. |

A font selected in this manner will remain effective until one of the following occurs:

- A new font is selected with the control panel
- A new font is selected with printer commands
- The power is turned off

If you wish to make the selected font the power-on default font, use the "SAVE" function in menu mode.

Using LaserJet Printer Commands to Select a Font

The other method for selecting fonts is to send commands from your computer. Aside from the convenience of this approach, it offers you the option to change fonts within a page.

Most commercial software has the appropriate printer commands already programmed, enabling you to select fonts at will without using the printer commands. For programs that offer HP LaserJet support, simply use the program's commands for selecting fonts (you'll find some additional tips in Chapter 5).

Sometimes the more convenient (or *only*) way to specify or change fonts is to embed printer commands into your file before it is printed. Each of the current attributes (orientation, symbol set, spacing, and so on) remains in effect until you change it. Therefore, it isn't necessary to specify *all* the attributes each time you change fonts – only the attribute(s) that you want to change.

When you specify font attributes, specify them in this order: *orientation, symbol set, spacing, pitch, point size, style, stroke weight, and typeface*. If the font you describe is not in the printer, the font most nearly matching the specified attributes will be used. The printer will examine the attributes in order (starting with orientation), comparing them with the attributes of fonts in the printer (all fonts are checked: resident, card, and soft).

The commands to select the primary font are summarized in the following table (more detailed information can be found in Appendix B). By changing the "(" in each command to ")", you can specify the secondary font. You can then switch between the two fonts with a single command: SI (ASCII 15) to select the primary font and SO (ASCII 14) to select the secondary font.

For example, send the following commands to select the resident Courier 10 Landscape font:

```
ESC & l l O ESC ( 8 U ESC ( s 0 p 1 0 h 1 2 v 0 s 0 b 3 T
```

| Attribute | Command |
|----------------------|------------------------------|
| Orientation | |
| Portrait | ESC & / 0 O |
| Landscape | ESC & / 1 O |
| Symbol set | |
| Roman-8 | ESC (8 U |
| PC-8 | ESC (10 U |
| Spacing | |
| Fixed | ESC (s 0 P |
| Proportional | ESC (s 1 P |
| Pitch | |
| 10 cpi | ESC (s 10 H |
| 16.66 cpi | ESC (s 16.66 H |
| Point size | |
| 10 pt | ESC (s 10 V |
| 12 pt | ESC (s 12 V |
| Style | |
| Upright | ESC (s 0 S |
| Italic | ESC (s 1 S |
| Stroke weight | |
| Light | ESC (s -3 B or ESC (s -1 B |
| Medium | ESC (s 0 B |
| Bold | ESC (s 3 B or ESC (s 1 B |
| Typeface | |
| Line Printer | ESC (s 0 T |
| Courier | ESC (s 3 T |
| Helv | ESC (s 4 T |
| TmsRmn | ESC (s 5 T |

7 Maintenance

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Introduction

The following chart outlines the maintenance procedures required for the RX7100PS and lists the symptoms indicating that maintenance is required.

| Procedure | When to Perform |
|---------------------------|--|
| Replace process cartridge | When printing is too light (approximately 6000 pages) |
| Replace cleaning pad | When replacing process cartridge |
| Clean corona wire | When replacing the process cartridge, or when print density is uneven |
| Clean paper path | When replacing the process cartridge, following removal of a paper jam, or when spots appear on printed sheets |
| Clean precharger wire | When print density is uneven |
| Clean exterior | As needed to preserve clean appearance |
| Replace ozone filter | When there is strong ozone odor |

This chapter discusses each of these procedures, as well as how to repack your printer.

Preventive Maintenance

Although there are no scheduled preventive maintenance procedures, there are a few things you can do to prevent problems with your printer:

- Follow the guidelines in Chapter 2 when selecting a location for your printer.

- Paper to be used in the printer should be stored properly to minimize paper jams. It should not be exposed to high humidity or moisture, which can cause wavy edges. Conversely, it should not be stored in direct sunlight or allowed to get too dry, which can cause electrostatic charge. Paper should be kept flat, not upright.
- Be sure to shake the process cartridge thoroughly to distribute the toner evenly before installation.
- Make sure that small objects such as paper clips do not drop into the printer.

Replacing the Process Cartridge

The process cartridge in your RX7100PS contains the toner used for printing. It is designed to last for approximately 6000 printed pages, although the actual number depends on the size of paper and the print density on each page.

When the printed pages become increasingly faint, it is time to replace the process cartridge. You will also be prompted by the "TONER LOW" message displayed on the control panel. This message is based on a page counter in the printer rather than on toner consumption; therefore the most reliable indicator is the appearance of printed pages.

Note

You may continue to print after the appearance of the "TONER LOW" message if the print quality is still satisfactory. This message will continue to flash alternately with the normal message (usually "IDLE") until the cartridge is replaced and the page counter is reset.

Replacement process cartridges are packaged with a cleaning pad and a cotton swab. Each time you replace the cartridge, you should perform the following:

- Remove the process cartridge
- Replace the cleaning pad
- Clean the corona wire
- Clean the paper path
- Clean the LED array
- Replace the process cartridge
- Reset the page counter

These procedures are described in the following sections.

Removing the Process Cartridge

To remove the process cartridge, follow these steps:

1. Turn the power off and open the top cover by pushing up on the cover lock lever and lifting the cover to its open position. Refer to Figure 7-1.

Note

If your printer is next to a wall, you should remove the paper bin(s) before you open the top cover. Otherwise, the bin may touch the wall behind the printer and fall off.

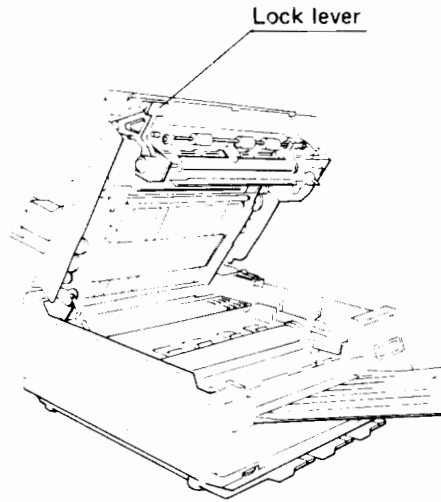


Figure 7-1 Opening the top cover

2. Push the two retaining clips to unlock the process cartridge, as shown in Figure 7-2. The cartridge will pop up out of its locked position.

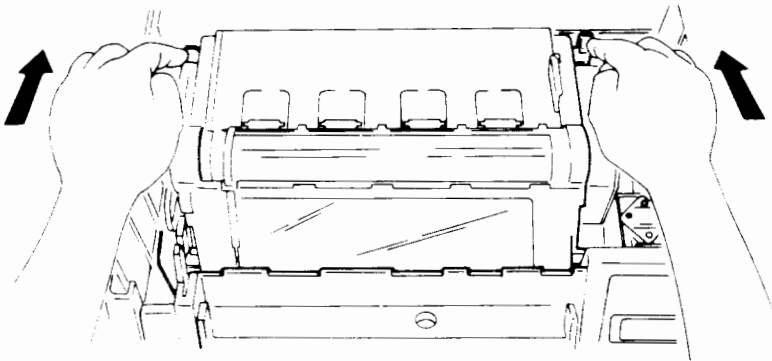


Figure 7-2 Unlocking the process cartridge

3. Lift the cartridge by the fin-shaped handles, tilting it towards the front of the printer until the top of the cartridge is about at the level of the top of the lower cover. Then move the cartridge towards the rear of the printer and lift it out (see Figure 7-3). The old cartridge can be discarded.

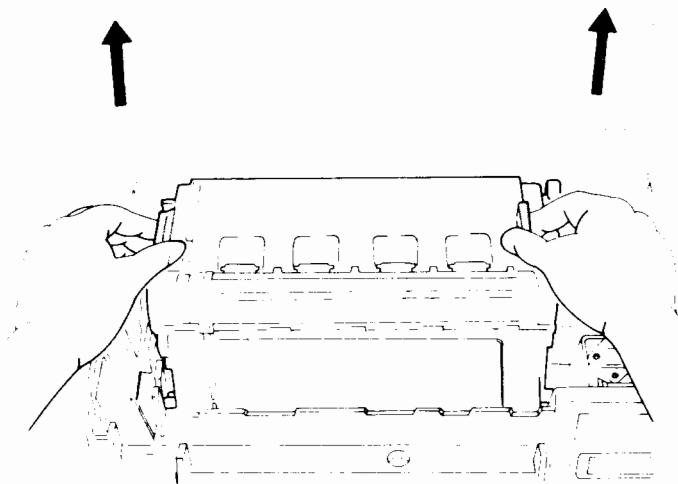


Figure 7-3 Removing the process cartridge

Replacing the Cleaning Pad

To replace the heat roller cleaning pad, follow these steps:

1. With the top cover open, push up the lock lever of the heat roller housing. The lever is located at the left front of the top cover (see Figure 7-4).

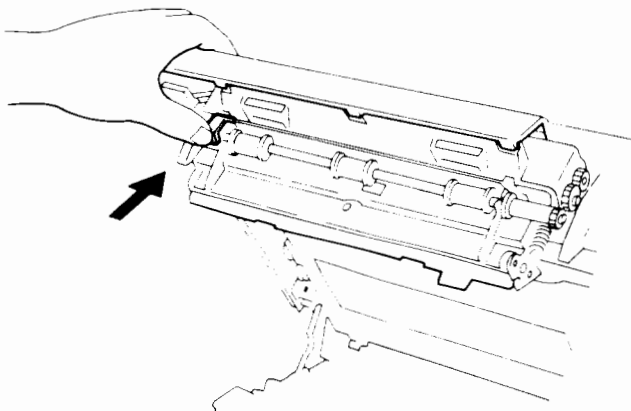


Figure 7-4 Unlocking the cleaning pad compartment

2. Pull the chrome exit roller shaft towards the front of the printer (see Figure 7-5) until it flips down to expose the green plastic back of the felt pad.

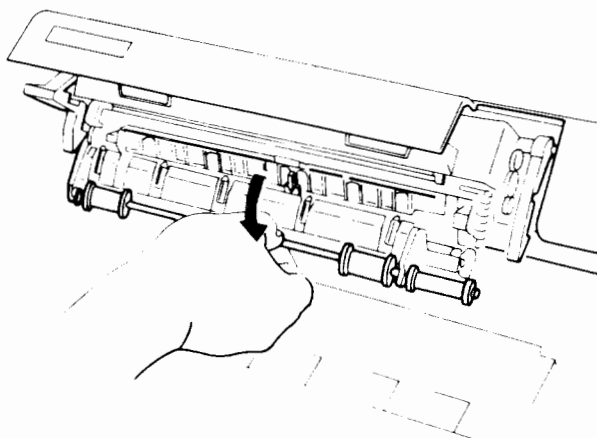


Figure 7-5 Opening the heat roller housing

3. Remove the old cleaning pad by lifting the plastic tab at the center, as shown in Figure 7-6. The old pad can be discarded.

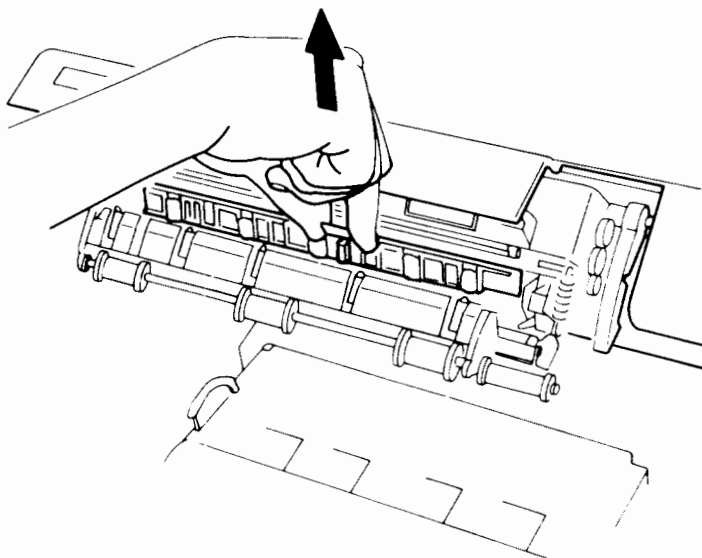


Figure 7-6 Removing the heat roller cleaning pad

4. Use the separator cleaning tool to scrape any residual toner off the five separators. Refer to Figure 7-7.

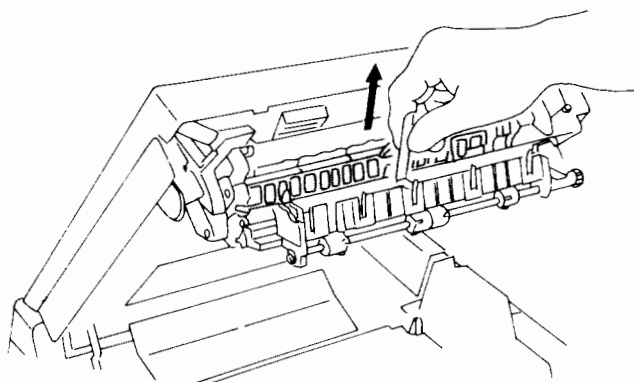


Figure 7-7 Scraping toner from separators

5. Use a damp cloth to clean any toner or paper dust on the heat roller. Rotate the roller as you clean it by turning the large white gear on the right side behind the roller. Dry the roller with a dry cloth before proceeding.

WARNING

The heat roller remains very hot for several minutes after turning off the power. Be careful to avoid touching the roller before it has cooled.

6. Place the new cleaning pad (with the felt side towards the heat roller) into the housing, as shown in Figure 7-8. Align the tab near the center in the V-shaped groove. Make sure that the pad is firmly seated in the housing.

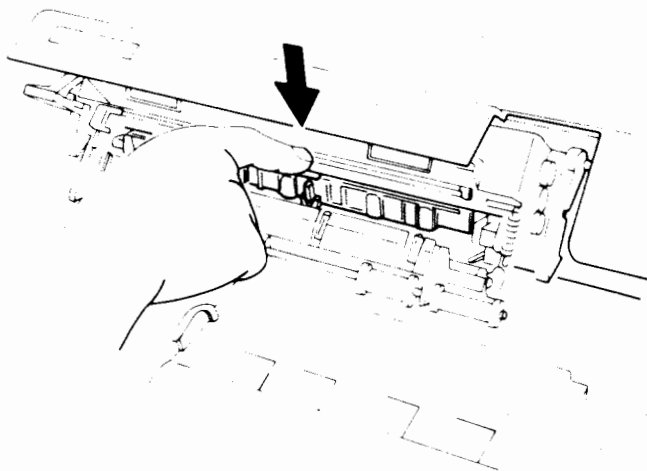


Figure 7-8 Installing the cleaning pad

7. Tilt the exit roller assembly up as shown in Figure 7-9 and press gently until it snaps shut.

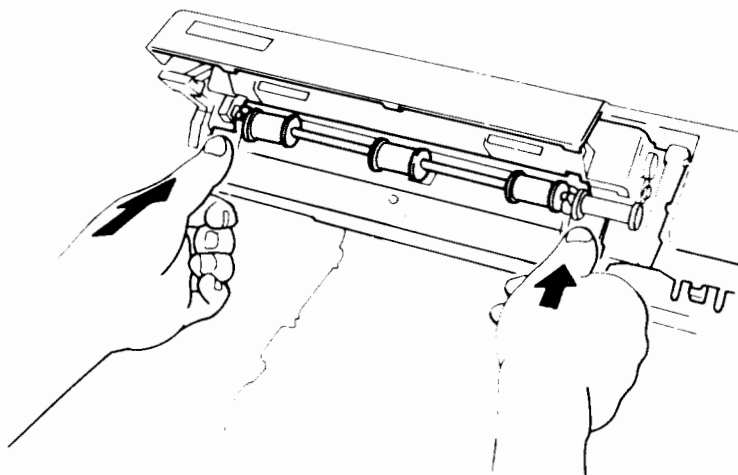


Figure 7-9 Closing the heat roller housing

Cleaning the Corona Wire

The corona wire is a thin wire located in a chrome housing in the top cover of the printer.

To clean the corona wire, use the wire cleaning tool furnished with the printer. Gently move the cleaner along the length of the wire to remove any toner particles (see Figure 7-10).

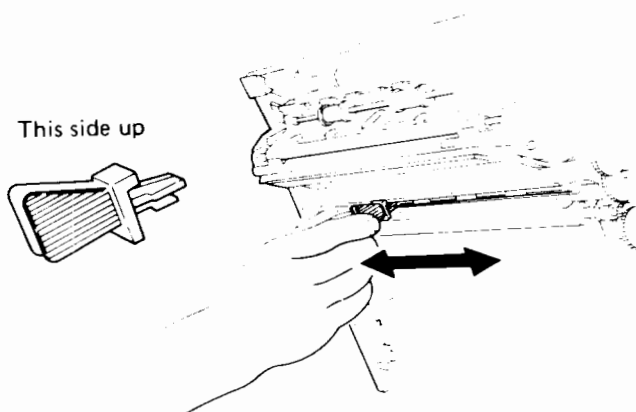


Figure 7-10 Cleaning the corona wire

Cleaning the Paper Path

Although the paper path should be cleaned each time the process cartridge is replaced, it's also important to clean the paper path after a paper jam occurs. If the process cartridge has not been removed, refer to the section "Removing the Process Cartridge" earlier in this chapter.

To clean the paper path, use a damp cloth, small vacuum, or blower to remove toner or paper dust from inside the printer.

Cleaning the LED Array

The LED array is a grid of light-emitting diodes which form the image on the drum. For best print quality, it's important to keep it clean. Use the cloth included with the cartridge to clean the LED array as shown in Figure 7-11.

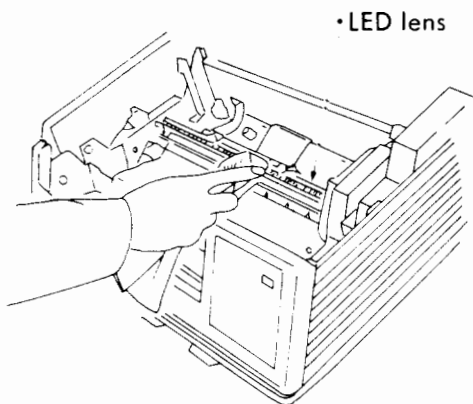


Figure 7-11 Cleaning the LED array

Replacing the Process Cartridge

1. Remove the new cartridge from its carton and rock it carefully as shown in Figure 7-12 to distribute the toner. Don't turn it upside down, as toner may spill out.

CAUTION

- Keep the process cartridge in its carton until you are ready to install it in the printer. Exposure to light for more than three minutes could damage the drum.
- Do not touch the green surface of the process cartridge drum. It scratches easily and dirt or oil from your hands can damage it.

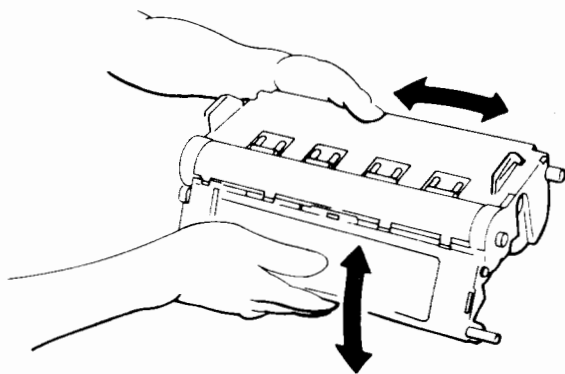


Figure 7-12 Distributing toner in the process cartridge

2. Hold the process cartridge by its handles and lower it into the printer, making sure that the pins on either side slide down the nylon grooves inside the printer (see Figure 7-13).

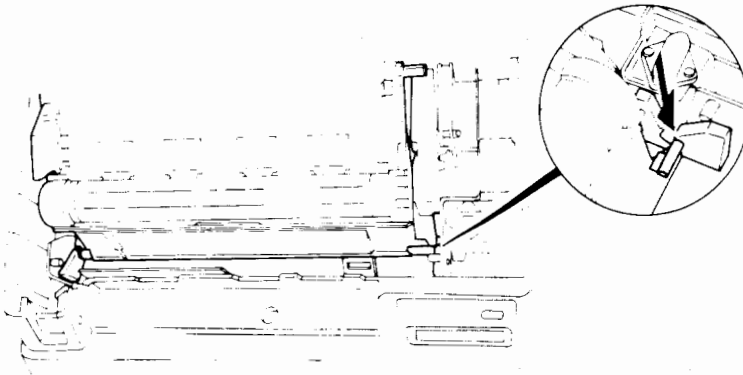


Figure 7-13 Installing the process cartridge

3. When the pins reach the bottom of the grooves, press down on the handles until both retaining clips snap the process cartridge into its locked position. See Figure 7-14.

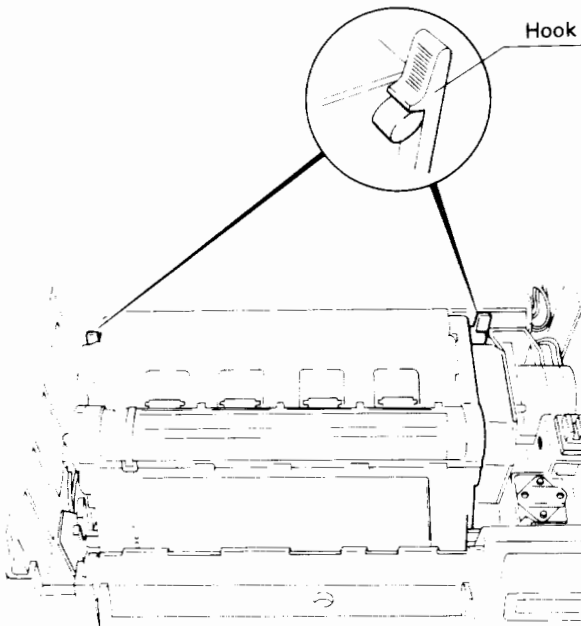


Figure 7-14 Locking the process cartridge into place

4. The drum is protected by two clear plastic sheets, which must now be removed. Simply pull on them one at a time to remove them. The first sheet has a finger hole for easy gripping (see Figure 7-15); the second sheet may require a firm tug to remove it completely.

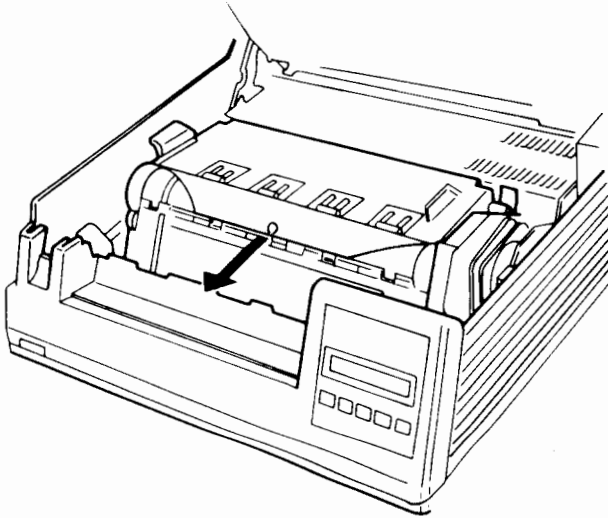


Figure 7-15 Removing the protective sheets

CAUTION

Be sure to remove *both* clear plastic protective sheets from the process cartridge before closing the top cover of the printer. Operating the printer without removing the sheets will cause irreparable damage to the process cartridge.

Resetting the Page Counter

To reset the page counter to zero, close the top cover (and install the paper bin if you removed it) and follow these steps:

| Press this button | Display | Comment |
|-------------------|--------------------|--|
| OFFLINE | OFFLINE IDLE | Switch offline. |
| MENU | SETUP | Enter menu mode. |
| NEXT | REPLACE PARTS | Press NEXT repeatedly until "REPLACE PARTS" is displayed. |
| ENTER | CARTRIDGE | |
| ENTER | UPDATING CARTRIDGE | Press ENTER to reset the page counter. |
| ONLINE | ONLINE IDLE | |

Note

The message displays shown in the preceding operation are PostScript messages; the LaserJet emulation messages differ slightly.

The "TONER LOW" message should not appear for another 6000 pages.

Cleaning the Printer

The following tools are required for cleaning the printer:

- Cotton swab (included with the replacement process cartridge kit)
- Damp cloth

Cleaning the Precharger Wire

It's rare that you'll need to clean the precharger wire, but it may be necessary if printed pages have dark vertical lines or uneven density. To clean it, follow these steps:

1. Open the top cover and remove the process cartridge as described earlier in this chapter.
2. Spread out a piece of newspaper on a table and place the process cartridge upside down on it. Look carefully at the bottom side of the cartridge; inside a slot you'll see a thin wire. This is the precharger wire.
3. To clean the wire, use the cotton swab supplied with the process cartridge. Gently move the swab along the length of the wire to remove any toner particles.
4. Place the process cartridge back in the printer and close the top cover.

Cleaning Exterior Surfaces

Use a damp cloth to clean the outside of the printer. Stubborn stains can be removed with a liquid household cleaner such as Formula 409. Be careful not to drip any liquid on the inside of the printer.

CAUTION

Alcohol and other cleaning solutions should not be used on any interior parts of the printer; these solutions may damage the printer.

Replacing the Ozone Filter

The ozone filter is good for about one year in general use. However, if you notice the pungent odor of ozone around your printer, you may wish to replace the ozone filter. To do so, follow these steps:

1. Remove the filter cover by pushing on the round "buttons" at each end of the cover and sliding it towards the back of the printer. Then lift the cover up. Refer to Figure 7-16.

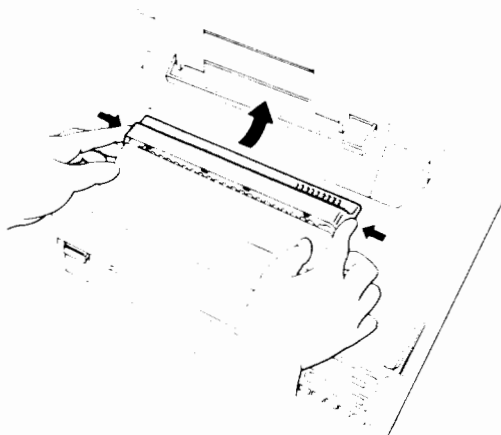


Figure 7-16 Removing the ozone filter cover

2. Remove the filter and insert a new one as shown in Figure 7-17.

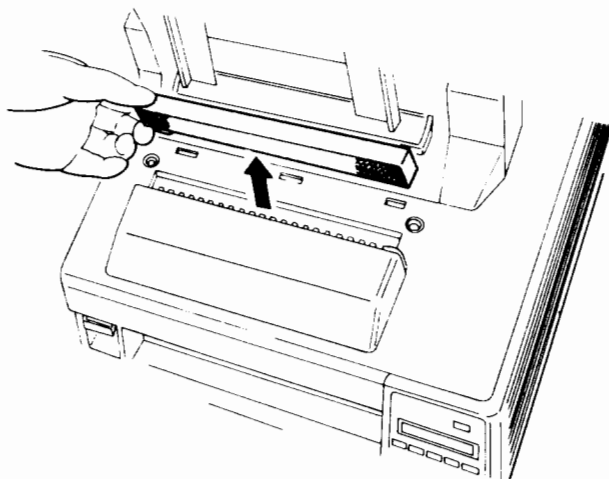


Figure 7-17 Replacing the ozone filter

3. Replace the filter cover by inserting the three tabs at the rear into the top cover of the printer and then sliding the cover towards the front until it snaps into place.

Repacking the Printer

If you need to store your printer or move it any great distance, it's important that you take the time to pack it in its original carton, which is specially designed to protect the RX7100PS.

First, remove the process cartridge and place it in its aluminum wrapping. Then enclose the printer in the plastic bag that came with it; this provides a protective barrier against moisture damage. Place the printer in its carton, using the foam pads to protect and brace the printer, as shown in Figure 7-18.

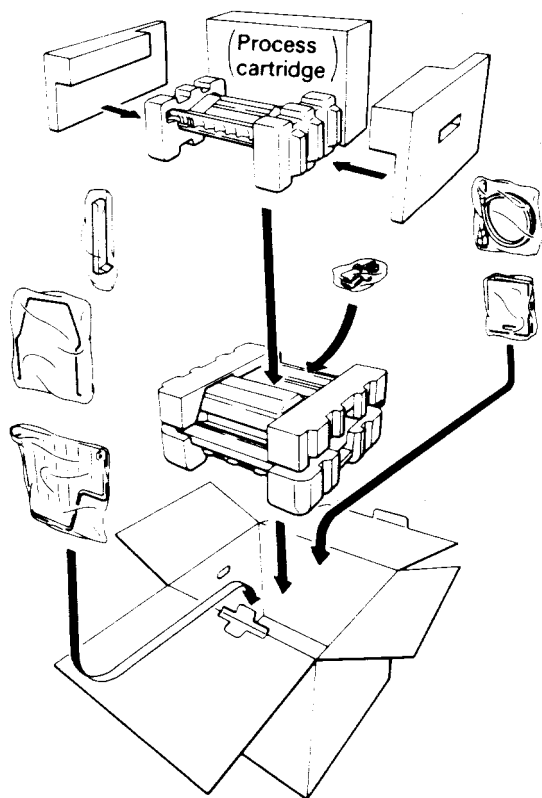


Figure 7-18 Repacking the printer

8 Solving Problems

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| Printer Status Messages | 8-12 |

1000

1000

1000

1000

1000

Introduction

Although the RX7100PS is designed to provide reliable operation, problems may occasionally occur. The most common problems are due to paper jamming or print quality. This chapter helps you to identify the problem and provides suggested solutions.

The chapter is divided into five sections:

- **Operational Problems.** Start here if the printer doesn't function properly. It may save a service call.
- **Print Quality Problems.** Check here if the printed sheets don't appear as they should.
- **Clearing Paper Jams.** Due to variable conditions in paper manufacturing and storage, it's not uncommon to have paper jams. This section tells you how to locate and clear them.
- **Error Messages.** The RX7100PS has self-diagnostic tests for a variety of hardware and interfacing problems. If it encounters a problem, it will display a message on the control panel. This section will help you to interpret the message.
- **Printer Status Messages.** These messages show the status of the printer at any given time and do not indicate an error condition. For example, the message PRINTING BIN1 means that the printer is printing and its paper source is bin 1.

Operational Problems

| Problem | Solution |
|---|--|
| Power does not turn on | Make sure that the power cord is plugged in at both ends and that the power outlet is working properly. |
| Printer does not initialize | Close the top cover completely. Install the process cartridge or lock it in position. Install the paper bin correctly. Check that the control panel connectors are connected (the back of the control panel can be seen by opening the top cover). |
| Printer initializes, but settings are wrong | Use menu mode (described in Chapter 4) to make the desired settings. If you are using the LaserJet emulation and you want these settings to remain after initialization or when you turn the power off and back on, be sure to select the save function before you exit. |
| Control panel does not operate | Check that the control panel connectors are connected (the back of the control panel can be seen by opening the top cover). |

Print Quality Problems

| Problem | Solution |
|-----------------------------|--|
| Printing is too light | Turn the print density dial to the right. Make sure the paper you're using is dry. Remove the process cartridge and rock it to distribute the toner evenly. Clean the corona wire. Replace the process cartridge. |
| Printing is too dark | Turn the print density dial to the left. |
| The page is black or blank | Replace the process cartridge. |
| Vertical density is uneven | Remove the process cartridge and rock it to distribute the toner evenly. Clean the corona wire. Clean the precharger. Replace the process cartridge. |
| Vertical white lines appear | Clean the LED light source (the iridescent strip underneath the process cartridge). |
| Stains or smudging occur | Clean the heat roller or pressure roller. Replace the heat roller cleaning pad if necessary. Clean the frame of the transfer unit. Clean the paper path. Print several pages if the problem occurs after jammed paper is removed. |

Clearing Paper Jams

The printer has sensors in three locations to detect paper jams. Because the paper path is short and straight, however, you should have no problem locating the jam. Paper jams should be removed quickly to avoid problems with the heat roller unit. To clear a jam (indicated by the message "PAPER JAM"), follow these steps:

1. It's possible that the sheet did not exit from the feed roller in bin 1, bin 2, or the manual feed slot. In most cases, the end of the sheet will still be sticking up in the bin. Try pulling it out. If you encounter too much resistance, continue with the procedure.
2. Open the top cover and find where the jam has occurred. For a jam before the heat roller, pull out the paper as shown in Figure 8-1.

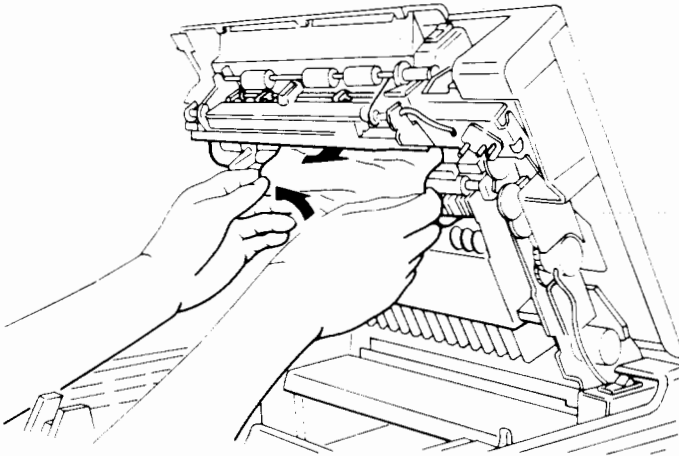


Figure 8-1 Removing jammed paper

3. If the jam occurs in the heat roller unit, open the unit by pressing the latch at the left front side as shown in Figure 8-2. Remove the jammed paper.

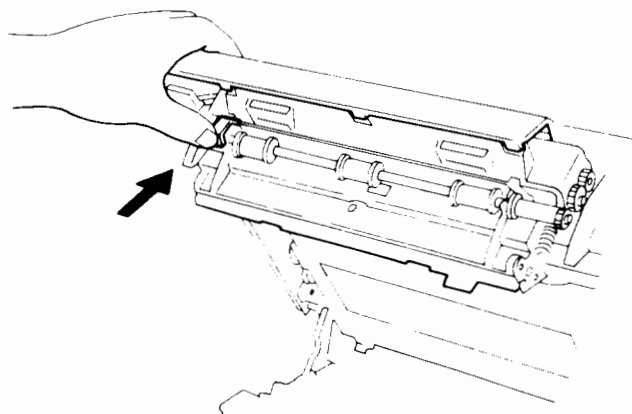


Figure 8-2 Opening the heat roller unit

4. Clean any toner out of the paper path, then close the top cover.

The following chart contains some additional tips on dealing with paper jams.

| Problem | Solution |
|-------------------------------------|---|
| Paper does not feed from the bin | The top edge may be deformed; try turning the paper around. Reset the paper release lever. Use fewer sheets in the bin. |
| Paper is not ejected to the stacker | Lock the heat roller unit properly. |

Error Messages

The RX7100PS will display a message on the control panel if there is a problem, or if there is some action you should take. The following chart shows each of the messages (listed alphabetically), describes the cause, and tells you how to resolve the situation.

| Message | Problem | Solution |
|---------------------|--|---|
| BIN n NOT MOUNTED | The printer attempted to print from the indicated bin ($n = 1$ or 2), but the bin was not mounted. | Mount the indicated bin and press the RESET/RESUME button. OR Select another bin. |
| BIN n PAPER OUT | The indicated paper bin ($n = 1$ or 2) is empty. | Load new paper into the bin as described in Chapter 2 and press the RESET/RESUME button. |
| CARD ERROR | The selected font card or emulation card was removed when the printer was online. | Turn the printer off and then back on again. |
| CHECK BIN n | The indicated paper input bin ($n = 1$ or 2) is not mounted correctly. | Install the bin as described in Chapter 2. |

| Message | Problem | Solution |
|---------------|--|--|
| COMM ERROR | The printer received data with a parity or other error through the serial interface. The most common cause of communication errors is a mismatch between the serial communication parameters on the computer and the printer. They can also occur when the printer's input buffer overflows. | Press the RESET/RESUME button to clear this error message. If you get this error repeatedly, check the serial interface settings on your printer (see Chapter 4) and on your computer (refer to your computer's operations manual), to make sure the settings are the same for both. Check the cable to make sure that it is wired correctly (see Appendix E) and that the wires are not broken. Replace it if necessary. |
| COVER OPEN | The top cover is open. | Press on the cover until it is firmly latched. |
| FAN FAILURE 1 | The temperature in the area of the power supply fan is too high. | Turn the printer power off and then back on again. If the error recurs, contact your dealer for service. |
| FAN FAILURE 2 | The temperature in the area of the cross-flow fan is too high. | Turn the printer power off and then back on again. If the error recurs, contact your dealer for service. |

| Message | Problem | Solution |
|--------------------|--|--|
| FUSER FAILURE | There is a malfunction in the fuser assembly. | Turn the printer power off, wait a few seconds, then turn it back on again. If the error recurs, contact your dealer for service. |
| INSERT <i>size</i> | The printer is prompting you to insert a sheet of paper of the indicated size (<i>size</i> = A4, B5, LEGAL, or LETTER) in the manual feed slot. | Insert a sheet of paper of the indicated size in the manual feed slot at the front of bin 1. OR To skip manual feed, press RESET/RESUME . The printer will print from bin 1. OR To print from bin 2, select bin 2. Note: Inserting paper of a size other than the one displayed may cause the printed image to be clipped. This is because the printer formats the image based on the requested size. |

| Message | Problem | Solution |
|------------------|---|---|
| INVALID CARD n | While the printer was offline, you inserted a font card into the indicated card slot ($n = 1, 2$, or 3) which was damaged, or which is not supported on the RX7100PS. You then pressed the ONLINE button. | Remove the invalid card from the indicated card slot and press the RESET/RESUME button. |
| MOTOR FAILURE | There has been a main motor malfunction. | Turn the printer power off and then back on again. If the error recurs, contact your dealer for service. |
| NO CARTRIDGE | The process cartridge is either not installed, or incorrectly installed. | Install the process cartridge following the instructions in Chapter 2, or make sure the cartridge is firmly seated. |
| OUT OF MEMORY | Too much data (macros or soft fonts) has been stored in the printer's memory. | Press the RESET/RESUME button to clear the error message (downloaded data is not lost). |
| PAPER JAM | There is a paper jam. | Follow the jam removal instructions earlier in this chapter. |

| Message | Problem | Solution |
|--|--|---|
| PAPER MISMATCH LOAD BIN n <i>size</i> | The printer received a request for a paper size (<i>size</i> = A4, B5, LEGAL, or LETTER) that is not currently loaded in the indicated bin (n = 1 or 2). | Load paper of the indicated size in the proper bin and press the RESET/RESUME button. OR Press RESET/RESUME to cause the printer to ignore the paper size request. Note: If the requested paper size does not match the size of the paper currently loaded, the RESET/RESUME button will allow you to print. However, since the output will be formatted for the requested paper size, a clipped image could occur (due to the fact that formatting is intended for the requested paper size). |
| PRNT. MEM. ERROR | There is a hardware error in the controller board. | Turn the printer power off and then back on again. If the error recurs, contact your dealer for service. |

| Message | Problem | Solution |
|-------------------|--|--|
| REINSERT CARD n | A font card (IC card) was removed from the indicated card slot ($n = 1, 2, \text{ or } 3$) while the printer was off-line and contained buffered data. | Reinsert the font card into the indicated card slot and press the RESET/RESUME button. |
| SELECT ERROR | You removed a font card while selecting a font in setup mode. | Press the RESET/RESUME button, then select the font again. |
| SYSTEM ERROR n | An error ($n = 1 - 5$) was detected in the printer's controller board. | Turn the printer off and then back on again. If the error recurs, contact your dealer for service. |

Printer Status Messages

The RX7100PS displays a number of messages to indicate the status, or mode, of the printer at any given time. These are informational messages and do not indicate error conditions. They require no action on the part of the user. These messages and their meanings are listed alphabetically below.

| Message | Meaning |
|-------------------------|---|
| FORM FEED <i>source</i> | <p>The printer is printing the data remaining in the buffer and the indicated paper source (<i>source</i> = BIN1, BIN2, MANUAL, AUTO:1, or AUTO:2) is selected.</p> <p>Note: When the printer is taken offline while printing, or while receiving data from the computer, the data light will go on. This indicates that some unprinted data remains in the printer's buffer. To print this data, press the FORM FEED button. The data will be printed from the indicated paper source.</p> |
| INITIALIZING | <p>The printer is initializing. This occurs whenever the printer is turned on, or when you press and hold the RESET/RESUME button for 3 seconds.</p> |
| ONLINE <i>source</i> | <p>The printer is online and the indicated paper source (<i>source</i> = BIN1, BIN2, MANUAL, AUTO:1, or AUTO:2) is selected.</p> <p>The printer is idle or is receiving data from the host computer.</p> |

| Message | Meaning |
|------------------------|--|
| OFFLINE <i>source</i> | The printer is offline and the indicated paper source (<i>source</i> = BIN1, BIN2, MANUAL, AUTO:1, or AUTO:2) is selected. The printer is not printing. |
| PRINTING <i>source</i> | The printer is online and printing, and the indicated paper source (<i>source</i> = BIN1, BIN2, MANUAL, AUTO:1, or AUTO:2) is selected. |
| PRINT OFFLINE | The ONLINE button was pressed during printing. The printer will stop after printing the current page, then go offline. |
| RESET | Displayed when you press and hold the RESET/RESUME button for 3 seconds. All printing menu items return to their default settings, and buffer pages, temporary soft fonts, and macros are cleared. |
| TONER LOW | Six thousand pages have been printed since the process cartridge was installed. You may continue printing if the print quality is acceptable. If the print quality is unacceptable, replace the process cartridge (see Chapter 7). |
| WARMING UP | The printer is warming up to its operational temperature. |

A Operator Summary (PostScript)

| | |
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Introduction

Most printers are controlled by commands – each one causing the printer to take a specific action such as print a character, move the print head, or change fonts. PostScript printers are actually *computers* that interpret programs written in the PostScript programming language. This language can be used for a variety of applications, but the primary one is to output printed pages.

This appendix contains a summary of all the operators in the PostScript language, organized into groups of related functions. The summary is intended to assist in locating the operators needed to perform specific tasks. Detailed descriptions of these operators can be found in the *PostScript Language Reference Manual* by Adobe Systems. This book, which is published by Addison-Wesley, is available in most stores that carry computer books. Some of the operators are unique to the RX7100PS; they are described in the *PostScript Language Supplement for the Fujitsu RX7100PS Printer* (available as a purchase option to printer owners).

Each operator description is presented in the following format:

$\text{operand}_1 \text{ operand}_2 \dots \text{operand}_n$ **operator** $\text{result}_1 \dots \text{result}_m$.

At the head of an operator description, operand_1 through operand_n are the operands that the operator requires, with operand_n being the topmost element on the operand stack. The operator pops these objects from the operand stack and uses them. After executing, the operator leaves the objects result_1 through result_m on the stack, with result_m being the topmost element.

Normally the operand and result names suggest their types. For example, *num* indicates that the operand or result is a number, *int* indicates an integer number, *any* indicates a value of any type, and *proc* indicates a PostScript procedure (i.e., an executable array). The notation "*bool | int*" indicates a value that is either a boolean or an integer.

Names representing numbers sometimes suggest their purpose, e.g., *x*, *y*, or *angle*. A *matrix* is an array of six numbers describing a transformation matrix. A *font* is a dictionary constructed according to the rules for font dictionaries.

The notation " " indicates the bottom of the stack. The notation "-" in the operand position indicates that the operator expects no operands, and a "-" in the result position indicates that the operator returns no results.



Operator Summary

Operand Stack Manipulation Operators



| | |
|--|---|
| any pop - | discard top element |
| any ₁ any ₂ exch any ₂ any ₁ | exchange top two elements |
| any dup any any | duplicate top element |
| any ₁ ..any _n n copy any ₁ ..any _n any ₁ ..any _n | duplicate top <i>n</i> elements |
| any _n ..any ₀ n index any _n ..any ₀ any _n | duplicate arbitrary element |
| a _{n-1} ..a ₀ nj roll a _(j-1) mod <i>n</i> ..a ₀ a _{n-1} ..a _j mod <i>n</i> | roll <i>n</i> elements up <i>j</i> times |
| † any ₁ ..any _n clear † | discard all elements |
| † any ₁ ..any _n count † any ₁ ..any _n <i>n</i> | count elements on stack |
| - mark mark | push mark on stack |
| mark obj ₁ ..obj _n cleartomark - | discard elements down through <i>mark</i> |
| mark obj ₁ ..obj _n counttomark mark obj ₁ ..obj _n <i>n</i> | count elements down to mark |

Arithmetic and Math Operators

| | |
|---|--|
| num ₁ num ₂ add sum | <i>num₁</i> plus <i>num₂</i> |
| num ₁ num ₂ div quotient | <i>num₁</i> divided by <i>num₂</i> |
| int ₁ int ₂ idiv quotient | integer divide |
| int ₁ int ₂ mod remainder | <i>int₁</i> mod <i>int₂</i> |
| num ₁ num ₂ mul product | <i>num₁</i> times <i>num₂</i> |
| num ₁ num ₂ sub difference | <i>num₁</i> minus <i>num₂</i> |
| num ₁ abs num ₂ | absolute value of <i>num₁</i> |
| num ₁ neg num ₂ | negative of <i>num₁</i> |

| | |
|--|--|
|  num1 ceiling num2 | ceiling of <i>num1</i> |
| num1 floor num2 | floor of <i>num1</i> |
|  num1 round num2 | round <i>num1</i> to nearest integer |
| num1 truncate num2 | remove fractional part of <i>num1</i> |
| num sqrt real | square root of <i>num</i> |
|  num den atan angle | arctangent of <i>num/den</i> in degrees |
| angle cos real | cosine of <i>angle</i> (degrees) |
| angle sin real | sine of <i>angle</i> (degrees) |
| base exponent exp real | raise <i>base</i> to <i>exponent</i> power |
| num ln real | natural logarithm (base <i>e</i>) |
|  num log real | logarithm (base 10) |
| - rand int | generate pseudo-random integer |
| int rand - | set random number seed |
| - rrand int | return random number seed |

Array Operators

| | |
|---|--|
|  int array array | create array of length <i>int</i> |
| - [mark | start array construction |
| mark obj0..obj _{n-1}] array | end array construction |
| array length int | number of elements in <i>array</i> |
|  array index get any | get array element indexed by <i>index</i> |
| array index any put - | put <i>any</i> into <i>array</i> at <i>index</i> |

| | |
|--|---|
| array index count getinterval subarray | subarray of <i>array</i> starting at <i>index</i> for <i>count</i> elements |
| array ₁ index array ₂ putinterval - | replace subarray of <i>array</i> ₁ starting at <i>index</i> by <i>array</i> ₂ |
| array aload a ₀ ..a _{n-1} array | push all elements of <i>array</i> on stack |
| any ₀ ..any _{n-1} array astore array | pop elements from stack into <i>array</i> |
| array ₁ array ₂ copy subarray ₂ | copy elements of <i>array</i> ₁ to initial subarray of <i>array</i> ₂ |
| array proc forall - | execute <i>proc</i> for each element of <i>array</i> |
| bool setpacking - | sets array packing mode |
| - currentpacking bool | returns current array packing mode |
| any ₀ ... any _{n-1} n packedarray packedarray | creates a packed array of length <i>n</i> |

Dictionary Operators

| | |
|---------------------------|--|
| int dict dict | create dictionary with capacity for <i>int</i> elements |
| dict length int | number of key-value pairs in <i>dict</i> |
| dict maxlength int | capacity of <i>dict</i> |
| dict begin - | push <i>dict</i> on dict stack |
| - end - | pop dict stack |
| key value def - | associate <i>key</i> and <i>value</i> in current dict |
| key load value | search dict stack for <i>key</i> and return associated value |
| key value store - | replace topmost definition of <i>key</i> |

dict key **get** any

get value associated
with *key* in *dict*

dict key value **put** -

associate *key* with *value*
in *dict*

dict key **known** bool

test whether *key* is in
dict

key **where** dict true *or* false

find dict in which *key* is
defined

dict₁ dict₂ **copy** dict₂

copy contents of *dict*₁ to
*dict*₂

dict proc **forall** -

execute *proc* for each
element of *dict*

- **errordict** dict

push **errordict** on
operand stack

- **systemdict** dict

push **systemdict** on
operand stack

- **userdict** dict

push **userdict** on
operand stack

- **currentdict** dict

push current dict on
operand stack

- **countdictstack** int

count elements on dict
stack

array **dictstack** subarray

copy dict stack into
array

String Operators

int **string** string

create string of length
int

string **length** int

number of elements in
string

string index **get** int

get string element in-
dexed by *index*

string index int **put** -

put *int* into *string* at
index

| | |
|--|--|
| string index count getinterval substring | substring of <i>string</i> starting at <i>index</i> for <i>count</i> elements |
| string ₁ index string ₂ putinterval - | replace substring of <i>string₁</i> starting at <i>index</i> by <i>string₂</i> |
| string ₁ string ₂ copy substring ₂ | copy elements of <i>string₁</i> to initial substring of <i>string₂</i> |
| string proc forall - | execute <i>proc</i> for each element of <i>string</i> |
| string seek anchorsearch post match true or string false | determine if <i>seek</i> is initial substring of <i>string</i> |
| string seek search post match pre true or string false | search for <i>seek</i> in <i>string</i> |
| string token post token true or false | read token from start of <i>string</i> |

Relational, Boolean, and Bitwise Operators

| | |
|---|---|
| any ₁ any ₂ eq bool | test equal |
| any ₁ any ₂ ne bool | test not equal |
| num ₁ str ₁ num ₂ str ₂ ge bool | test greater or equal |
| num ₁ str ₁ num ₂ str ₂ gt bool | test greater than |
| num ₁ str ₁ num ₂ str ₂ le bool | test less or equal |
| num ₁ str ₁ num ₂ str ₂ lt bool | test less than |
| bool ₁ int ₁ bool ₂ int ₂ and bool ₃ int ₃ | logical bitwise and |
| bool ₁ int ₁ not bool ₂ int ₂ | logical bitwise not |
| bool ₁ int ₁ bool ₂ int ₂ or bool ₃ int ₃ | logical bitwise inclusive or |
| bool ₁ int ₁ bool ₂ int ₂ xor bool ₃ int ₃ | logical bitwise exclusive or |
| - true true | push boolean value <i>true</i> |
| - false false | push boolean value <i>false</i> |
| int ₁ shift bitshift int ₂ | bitwise shift of <i>int₁</i> (positive is left) |

Control Operators

| | |
|--|--|
| any exec - | execute arbitrary object |
| bool proc if - | execute <i>proc</i> if <i>bool</i> is true |
| bool proc1 proc2 ifelse - | execute <i>proc1</i> if <i>bool</i> is true, <i>proc2</i> if <i>bool</i> is false |
| init incr limit proc for - | execute <i>proc</i> with values from <i>init</i> by steps of <i>incr</i> to <i>limit</i> |
| int proc repeat - | execute <i>proc</i> <i>int</i> times |
| proc loop - | execute <i>proc</i> an indefinite number of times |
| - exit - | exit innermost active loop |
| - stop - | terminate stopped context |
| any stopped bool | establish context for catching stop |
| pattern proc scratchstring filenameforall - | executes <i>proc</i> for each file matching <i>pattern</i> |
| - countexecstack int | count elements on exec stack |
| array execstack subarray | copy exec stack into <i>array</i> |
| - quit - | terminate interpreter |
| - start - | executed at interpreter startup |

Type, Attribute, and Conversion Operators

| | |
|----------------------|--|
| any type name | return name identifying <i>any</i> 's type |
| any cvlit any | make object be literal |
| any cvx any | make object be executable |

| | |
|---|-------------------------------|
| any xcheck bool | test executable attribute |
| array file string executeonly | reduce access to execute-only |
| array file string | |
| array dict file string noaccess | disallow any access |
| array dict file string | |
| array dict file string readonly | reduce access to read-only |
| array dict file string | |
| array dict file string rcheck bool | test read access |
| array dict file string wcheck bool | test write access |
| num string cvi int | convert to integer |
| string cvn name | convert to name |
| num string cvr real | convert to real |
| num radix string cvs substring | convert to string with radix |
| any string cvs substring | convert to string |

File Operators

| | |
|--|---|
| string ₁ string ₂ file file | open file identified by <i>string₁</i> with access <i>string₂</i> |
| file closefile - | close file |
| file read int true or false | read one character from <i>file</i> |
| file int write - | write one character to <i>file</i> |
| file string readhexstring substring bool | read hex from <i>file</i> into <i>string</i> |
| file string writhexstring - | write <i>string</i> to <i>file</i> as hex |
| file string readstring substring bool | read string from <i>file</i> |
| file string writestring - | write characters of <i>string</i> to <i>file</i> |
| file string readline substring bool | read line from <i>file</i> into <i>string</i> |
| file token token true or false | read token from <i>file</i> |

file **bytesavailable** int

number of bytes available to read

- **flush** -

send buffered data to standard output file

file **flushfile** -

send buffered data or read to EOF

file **resetfile** -

discard buffered characters

file **status** bool

return status of *file*

stringname **status** pages bytes access
creation true *or* if file-not-found: false

returns status information for a file

string **run** -

execute contents of named file

- **currentfile** file

return file currently being executed

string **print** -

write characters of *string* to standard output file

any = -

write text representation of *any* to standard output file

↑ any₁.._n **stack** ↑ any₁.._n

print stack nondestructively using =

any == -

write syntactic representation of *any* to standard output file

↑ any₁.._n **pstack** ↑ any₁.._n

print stack nondestructively using ==

- **prompt** -

executed when ready for interactive input

bool **echo** -

turn on/off echoing

Virtual Memory Operators

- **save** save

create VM snapshot

save **restore** -

restore VM snapshot

- **vmstatus** level used maximum

report VM status

Miscellaneous Operators

| | |
|---------------------------------------|---|
| <code>proc bind proc</code> | replace operator names in <i>proc</i> by operators |
| - <code>null null</code> | push null on operand stack |
| - <code>usertime int</code> | return time in milli-seconds |
| - <code>pagecount int</code> | returns number of pages printed since machine was built |
| - <code>jobname string</code> | returns name of current job |
| - <code>product string</code> | returns name of printer |
| - <code>revision string</code> | returns PostScript interpreter software revision level |
| - <code>version string</code> | interpreter version |
| old new <code>setpassword bool</code> | sets system administrator password |
| <code>int checkpassword bool</code> | returns <i>true</i> if <i>int</i> is current password |

Graphics State Operators

| | |
|-------------------------------------|---|
| - <code>gsave -</code> | save graphics state |
| - <code>grestore -</code> | restore graphics state |
| - <code>grestoreall -</code> | restore to bottommost graphics state |
| - <code>initgraphics -</code> | reset graphics state parameters |
| num <code>setlinewidth -</code> | set line width |
| - <code>currentlinewidth num</code> | return current line width |
| <code>int setlinecap -</code> | set shape of line ends for stroke (0=butt, 1=round, 2=square) |

- **currentlinecap** int

int **setlinejoin** -

return current line cap

set shape of corners for stroke (0=miter, 1=round, 2=bevel)

- **currentlinejoin** int

num **setmiterlimit** -

return current line join

set miter length limit

- **currentmiterlimit** num

return current miter limit

array offset **setdash** -

set dash pattern for stroking

- **currentdash** array offset

return current dash pattern

num **setflat** -

set flatness tolerance

- **currentflat** num

return current flatness

num **setgray** -

set color to gray value from 0 (black) to 1 (white)

- **currentgray** num

return current gray

hue set brt **sethsbcolor** -

set color given hue, saturation, brightness

- **currenthsbcolor** hue sat brt

return current color hue, saturation, brightness

red green blue **setrgbcolor** -

set color given red, green, blue

- **currentrgbcolor** red green blue

return current color red, green, blue

freq angle proc **setscreen** -

set halftone screen

- **currentscreen** freq angle proc

return current halftone screen

proc **settransfer** -

set gray transfer function

- **currenttransfer** proc

return current transfer function

Coordinate System and Matrix Operators

| | |
|---|---|
| - matrix matrix | create identity matrix |
| - initmatrix - | set CTM to device default |
| matrix identmatrix matrix | fill <i>matrix</i> with identity transform |
| matrix defaultmatrix matrix | fill <i>matrix</i> with device default matrix |
| matrix currentmatrix matrix | fill <i>matrix</i> with CTM |
| matrix setmatrix - | replace CTM by <i>matrix</i> |
| t_x t_y translate - | translate user space by (t_x, t_y) |
| t_x t_y matrix translate matrix | define translation by (t_x, t_y) |
| s_x s_y scale - | scale user space by s_x and s_y |
| s_x s_y matrix scale matrix | define scaling by s_x and s_y |
| angle rotate - | rotate user space by <i>angle</i> degrees |
| angle matrix rotate matrix | define rotation by <i>angle</i> degrees |
| matrix concat - | replace CTM by <i>matrix</i> x CTM |
| matrix ₁ matrix ₂ matrix ₃ concatmatrix matrix ₃ | fill <i>matrix₃</i> with <i>matrix₁</i> x <i>matrix₂</i> |
| x y transform x' y' | transform (x, y) by CTM |
| x y matrix transform x' y' | transform (x, y) by <i>matrix</i> |
| dx dy dtransform dx' dy' | transform distance (dx, dy) by CTM |
| dx dy matrix dtransform dx' dy' | transform distance (dx, dy) by <i>matrix</i> |
| x' y' itransform x y | inverse transform (x', y') by CTM |

$x' y'$ matrix **itransform** $x y$

inverse transform (x', y')
by *matrix*

$dx' dy'$ **idtransform** $dx dy$

inverse transform dis-
tance (dx', dy') by CTM

$dx' dy'$ matrix **idtransform** $dx dy$

inverse transform dis-
tance (dx', dy') by *matrix*

$matrix_1 matrix_2$ **invertmatrix** $matrix_2$

fill *matrix_2* with inverse
of *matrix_1*

Path Construction Operators

- **newpath** -

initialize current path to
be empty

- **currentpoint** $x y$

return current point
coordinate

$x y$ **moveto** -

set current point to (x, y)

$dx dy$ **rmoveto** -

relative moveto

$x y$ **lineto** -

append straight line to
(x, y)

$dx dy$ **rlineto** -

relative lineto

$x y r ang_1 ang_2$ **arc** -

append counterclock-
wise arc

$x y r ang_1 ang_2$ **arcn** -

append clockwise arc

$x_1 y_1 x_2 y_2 r$ **arcto** $x_{t1} y_{t1} x_{t2} y_{t2}$

append tangent arc

$x_1 y_1 x_2 y_2 x_3 y_3$ **curveto** -

append Bezier cubic
section

$dx_1 dy_1 dx_2 dy_2 dx_3 dy_3$ **rcurveto** -

relative curveto

- **closepath** -

connect subpath back
to its starting point

- **flattenpath** -

convert curves to se-
quences of straight lines

- **reversepath** -

reverse direction of cur-
rent path

- **strokepath** -

compute outline of
stroked path

| | |
|---|---|
| string bool charpath - | append character out-line to current path |
| - clippath - | set current path to clipping path |
| - pathbbox ll _x ll _y ur _x ur _y | return bounding box of current path |
| move line curve close pathforall - | enumerate current path |
| - initclip - | set clip path to device default |
| - clip - | establish new clipping path |
| - eoclip - | clip using even-odd inside rule |

Painting Operators

| | |
|--|--|
| - erasepage - | paint current page white |
| - fill - | fill current path with current color |
| - eofill - | fill using even-odd rule |
| - stroke - | draw line along current path |
| width height bits/sample matrix proc image - | render sampled image onto current page |
| width height invert matrix proc imagemask - | render mask onto current page |

Device Setup and Output Operators

| | |
|---|-------------------------------|
| - showpage - | output and reset current page |
| - copypage - | output current page |
| matrix width height proc banddevice - | install band buffer device |
| matrix width height proc framedevice - | install frame buffer device |

| | |
|---|---|
| - nulldevice - | install no-output device |
| proc renderbands - | enumerate bands for output to device |
| device devstatus free size | returns information about <i>device</i> |
| device devmount bool | "mounts" a cartridge device |
| device devdismount - | "dismounts" a cartridge device |
| string cartstatus false <i>or</i> type id filetype true | returns status information for a device or file |

Character and Font Operators

| | |
|---|---|
| key font definefont font | register <i>font</i> as a font dictionary |
| key findfont font | return font dict identified by <i>key</i> |
| font scale scalefont font' | scale <i>font</i> by <i>scale</i> to produce new <i>font'</i> |
| font matrix makefont font' | transform <i>font</i> by <i>matrix</i> to produce new <i>font'</i> |
| font setfont - | set font dictionary |
| - currentfont font | return current font dictionary |
| string show - | print characters of <i>string</i> on page |
| a_x a_y string ashow - | add (a_x , a_y) to width of each char while showing <i>string</i> |
| c_x c_y char string widthshow - | add (c_x , c_y) to width of <i>char</i> while showing <i>string</i> |
| c_x c_y char a_x a_y string awidthshow - | combined effects of <i>ashow</i> and <i>widthshow</i> |

| | |
|--|---|
| proc string kshow - | execute <i>proc</i> between characters shown from <i>string</i> |
| string stringwidth $w_x w_y$ | width of <i>string</i> in current font |
| - FontDirectory dict | dictionary of font dictionaries |
| - StandardEncoding array | standard font encoding vector |
| mark font $s_x s_y$ rot nchars ... setidlefonts - | specifies characters to be scan converted while idle |
| - idlefonts mark font $s_x s_y$ rot nchars ... | returns idle time scan conversion characters |

Font Cache Operators

| | |
|--|------------------------------------|
| - cachestatus bsize bmax msize mmax csize cmax blimit | return cache status and parameters |
| $w_x w_y ll_x ll_y ur_x ur_y$ setcachedevice - | declare cache character metrics |
| $w_x w_y$ setcharwidth - | declare uncached character metrics |
| num setcachelimit - | set max bytes in cached character |
| mark lower upper setcacheparams - | sets cache parameters |
| - currentcacheparams mark lower upper | returns cache parameters |

RX7100PS Control Operators

| | |
|------------------------------------|--------------------------------------|
| string setprintrname - | <i>string</i> becomes printer's name |
| string printrname substring | stores printer name in <i>string</i> |
| setting sethardwareiomode - | sets communication interface |
| - hardwareiomode integer | returns current interface |

| | |
|---|--|
| channel baud options setscbatch - | set serial parameters for <i>channel</i> |
| channel sccbatch baud options | returns serial parameters for <i>channel</i> |
| bool setdostartpage - | specifies power-on startpage printing |
| - dostartpage bool | returns startpage setting |
| int setallowjobreset - | enables front panel job reset |
| - allowjobreset int | returns job reset setting |
| top left setmargins - | adjusts margins |
| - margins top left | returns margin settings |
| bin setdefaultpapertray - | selects default paper bin |
| - defaultpapertray bin | returns default paper bin |
| bool setdefaultmanualfeed - | initializes manualfeed in statusdict |
| - defaultmanualfeed bool | returns default manual-feed |
| job manualfeed wait setdefaulttimeouts - | sets defaults for three timeouts |
| - defaulttimeouts job manualfeed wait | returns current timeout values |
| index value seteescratch - | writes <i>value</i> in EEROM scratch array |
| index eescratch value | returns <i>value</i> from EEROM scratch array |
| int setjobtimeout - | sets timeout for current job |
| - jobtimeout int | returns remaining time before job timeout |
| - manualfeedtimeout int | returns current manual feed timeout |
| - waittimeout int | returns current wait timeout |

| | |
|---------------------------|-------------------------------------|
| - manualfeed bool | returns <i>true</i> for manual feed |
| int setpapertray - | selects paper bin and size |
| - papertray int | returns current paper bin |

Errors

| | |
|---------------------------|--|
| dictfull | no more room in dictionary |
| dictstackoverflow | too many begins |
| dictstackunderflow | too many ends |
| execstackoverflow | exec nesting too deep |
| handleerror | called to report error information |
| interrupt | external interrupt request (e.g., control-C) |
| invalidaccess | attempt to violate access attribute |
| invalidexit | exit not in loop |
| invalidfileaccess | unacceptable access string |
| invalidfont | invalid font name or dict |
| invalidrestore | improper restore |
| ioerror | input/output error occurred |
| limitcheck | implementation limit exceeded |
| nocurrentpoint | current point is undefined |
| rangecheck | operand out of bounds |
| stackoverflow | operand stack overflow |
| stackunderflow | operand stack underflow |

| | |
|--------------------------|--|
| syntaxerror | syntax error in Post-Script program text |
| timeout | time limit exceeded |
| typecheck | operand of wrong type |
| undefined | name not known |
| undefinedfilename | file not found |
| undefinedresult | over/underflow or meaningless result |
| unmatchedmark | expected mark not on stack |
| unregistered | internal error |
| VError | VM exhausted |

B Command Reference (LaserJet)

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Introduction

This appendix lists the control codes used to emulate the HP LaserJet series II command set. The commands are arranged in the following groups:

- Page layout
- Print positioning
- Font control
- Graphics
- Macro control
- Printer control

Each group is further subdivided according to function. In each subdivision, the first column contains a code sequence that you can send to the printer. The second column gives a description of that sequence.

The code sequence consists of one or more codes. For clarity, in this manual there is a space shown between each code. Therefore, if you see two or three letters that are *not* separated by spaces (such as "BS"), these letters represent a single ASCII code (i.e., not the letter "B" followed by the letter "S"). Refer to Appendix C to find the numeric value of each of these codes.

This appendix uses the following conventions:

- ESC indicates the escape code. Nearly all the printer commands begin with an escape code, which has a decimal value of 27 (hexadecimal 1B).
- The lowercase letter "L" is always shown in italics (*l*) to distinguish it from the number 1.

- A # sign indicates a variable numeric value in the sequence. The second column indicates the values you can use here. Normally you'll use the corresponding ASCII codes. For example, in the first command below, if you wanted to set the page length to 66 lines, send the corresponding ASCII codes for "ESC & l 6 6 P", which in decimal values would be 027 038 108 054 054 080.
- A question mark in the code sequence indicates a variable letter in the sequence. The second column indicates the letters of the alphabet you can use here. Use a capital letter as shown.
- Some of the font commands have an almost identical format for both primary and secondary fonts, and these are shown immediately following each other. In these cases, the explanation is not repeated for the secondary font command.

Note

Some fonts (or individual font characteristics, such as symbol set or typeface) described in this appendix are available only on optional font cards or soft fonts.

Specifying Fonts

When you specify font attributes, specify them in this order: *orientation, symbol set, spacing, pitch, point size, style, stroke weight, and typeface*. If the font you describe is not in the printer, the font most nearly matching the specified attributes will be used. The printer will examine the attributes in order (starting with orientation), comparing them with the attributes of fonts in the printer (all fonts are checked: resident, card, and soft).

For example, send the following commands to select the resident Courier 10 Landscape font:

```
ESC & l 1 O ESC ( 8 U ESC ( s 0 p 1 0 h 1 2 v 0 s 0 b 3 T
```

The commands to select the primary and secondary fonts have an almost identical format. By changing the "(" in the primary font command to ")", you can specify the secondary font. You can then switch between the two fonts with a single command: SI (ASCII 15) to select the primary font and SO (ASCII 14) to select the secondary font.

Combining Commands

Commands that share the same two characters following the escape code can be combined when sent to the printer. This can simplify entry of a long string of commands. To use this feature:

- The two characters following the escape code in the command sequence must be the same.
- In the combined command, the escape code and these two characters are omitted except for the first occurrence.
- The last character of each command must be changed to lowercase, except for the last command.

For example, ESC & a 10 L (which sets the left margin at column 10) and ESC & a 75 M (which sets the right margin at column 75) can be combined as ESC & a 10 l 75 M.

Page Layout Commands

Page Length and Size

| Command | Description |
|-------------|---|
| ESC & l # P | Set page length. Value of # is the number of possible print lines per page. With default vertical spacing (6 lpi), correct values are: 60 B5 size 66 letter size (8-1/2" x 11") 70 A4 size 84 legal size (8-1/2" x 14") |

| Command | Description |
|-------------|--|
| ESC & l # A | Set paper size. Value of # can be: 1 executive (7-1/4" x 10-1/2") 2 letter (8-1/2" x 11") 3 legal (8-1/2" x 14") 26 A4 (210 mm x 297 mm) |

Margins

| Command | Description |
|-------------|--|
| ESC & a # L | Set left margin at column number #. The left edge of the page is column 0 – the default left margin. |
| ESC & a # M | Set right margin at column number #. The default is rightmost printable character position. |
| ESC & l # E | Set top margin. Value of # is number of lines (VMI units) from top edge of page. The first line of the page is line 0. |
| ESC & l # F | Set number of print lines per page. This value plus the top margin must not exceed the page length. Bottom margin is page length minus this value minus the top margin value. The default text length (in lines) is ((<i>page length in inches</i> - 1) x 6). |
| ESC & l # L | Skip over perforation. Value of # can be: 0 allow printing in bottom margin area 1 form feed if a vertical positioning command would cause printing in bottom margin area |
| ESC 9 | Clear left and right margin settings. |

Print Positioning Commands

Horizontal Positioning

| Command | Description |
|-------------|--|
| ESC & k # H | Set horizontal spacing (HMI measurement). Value is set to #/120 inches. Default is 12 (10 cpi). |
| BS | Backspace. Move left one column (one HMI unit). |
| CR | Carriage return. Move to left margin of the current line (or the following line, depending on the line termination set by the "ESC & k # G" command). |
| ESC & a # C | Move to specified column in current row. Value of # can be any column number. If # is preceded by + (move right) or - (move left), cursor movement is relative to the current position. |
| ESC * p # X | Move to specified horizontal position. Value of # is number of dots (1/300 inch), measured from the left edge of the page. If # is preceded by + (move right) or - (move left), cursor movement is relative to the current position. |
| ESC & a # H | Move to specified horizontal position. Value of # is number of decipoints (1/720 inch), measured from the left edge of the page. If # is preceded by + (move right) or - (move left), cursor movement is relative to the current position. |

Vertical Positioning

| Command | Description |
|-------------|--|
| ESC & l # C | Set vertical spacing (VMI measurement). Value is set to #/48 inches. Default is 8 (6 lpi). |
| ESC & l # D | Set vertical spacing (lpi measurement). Value of # indicates number of lines per inch, and can be 1, 2, 3, 4, 6, 8, 12, 16, 24, or 48. |
| FF | Form feed. Print current page, go to top of next page (and move to the left margin, depending on the line termination set by the "ESC & k # G" command). |
| LF | Line feed. Move down one line (one VMI unit) (and move to the left margin, depending on the line termination set by the "ESC & k # G" command). |
| ESC = | Move down half a line (0.5 VMI units). |
| ESC & a # R | Move to specified row in current column. Value of # can be any line number. If # is preceded by + (move down) or - (move up), cursor movement is relative to the current position. |
| ESC * p # Y | Move to specified vertical position. Value of # is number of dots (1/300 inch), measured from the top margin. If # is preceded by + (move down) or - (move up), cursor movement is relative to the current position. |
| ESC & a # V | Move to specified vertical position. Value of # is number of decipoints (1/720 inches), measured from the top margin. If # is preceded by + (move down) or - (move up), cursor movement is relative to the current position. |

Horizontal and Vertical Positioning

| Command | Description |
|-------------|--|
| ESC & f # S | Store/recall print position. Value of # can be: 0 store current print position 1 move to last stored print position Up to 20 positions can be stored; they are recalled in the order of last in, first out. |

Font Control Commands

Font Selection

| Command | Description |
|---------|--|
| SI | Select the primary font as the current font. |
| SO | Select the secondary font as the current font. |

Orientation

| Command | Description |
|-------------|---|
| ESC & l # O | Set page orientation. Value of # can be: 0 portrait 1 landscape |

Symbol Set

| Command | Description |
|-----------|--|
| ESC (# ? | <p>Select symbol set for primary font. Value of # can be from 0 to 2047; value of ? can be A to U. Possible combinations are:</p> <p>8 U Roman-8</p> <p>10 U PC-8</p> <p>11 U PC-8 (D/N)</p> <p>0 N Latin ECMA-94 (ISO 100)</p> <p>2 K Chinese (ISO 57)</p> <p>0 F French (ISO 25)</p> <p>1 F French (ISO 69)</p> <p>0 G German (HP)</p> <p>1 G German (ISO 21)</p> <p>2 U International Reference Version (ISO 2)</p> <p>0 I Italy (ISO 15)</p> <p>0 K JIS ASCII (ISO 14)</p> <p>0 D Norway (ISO 60)</p> <p>1 D Norway (ISO 61)</p> <p>0 S Sweden (ISO 11)</p> <p>1 S Spain (HP)</p> <p>2 S Spain (ISO 17)</p> <p>3 S Sweden (ISO 10)</p> <p>4 S Portugal (ISO 16)</p> <p>5 S Portugal (IBM/ISO 84)</p> <p>6 S Spain (IBM/ISO 85)</p> <p>1 E United Kingdom (ISO 4)</p> <p>0 U US ASCII (ISO 6)</p> <p>0 B LineDraw</p> |
| ESC) # ? | Select symbol set for secondary font. |

Spacing

| Command | Description |
|-------------|---|
| ESC (s # P | Set spacing for primary font. Value of # can be: 0 monospaced (fixed pitch) font 1 proportionally-spaced font |
| ESC) s # P | Set spacing for secondary font. |

Pitch

| Command | Description |
|-------------|--|
| ESC (s # H | Set pitch for primary font. Value of # indicates the pitch in characters per inch (cpi). This is ignored for a proportionally-spaced font. |
| ESC) s # H | Set pitch for secondary font. |
| ESC & k # S | Set pitch for primary and secondary fonts. Value of # can be: 0 10 cpi (standard pitch) 2 16.66 cpi (compressed pitch) |

Point Size

| Command | Description |
|-------------|---|
| ESC (s # V | Select point size for primary font. Value of # is the character size in points (1 point = 1/72 inch). |
| ESC) s # V | Select point size for secondary font. |

Style

| Command | Description |
|-------------|---|
| ESC (s # S | Set style for primary font. Value of # can be: 0 upright 1 italic |
| ESC) s # S | Set style for secondary font. |

Stroke Weight

| Command | Description |
|-------------|--|
| ESC (s # B | Set stroke weight for primary font. This controls the lightness or boldness of printed characters. Value of # can be from -7 to 7, as follows: -7 ultra thin -5 thin -3 light 0 medium 3 bold 5 black 7 ultra black |
| ESC) s # B | Set stroke weight for secondary font. |

Typeface

| Command | Description |
|-------------|---|
| ESC (s # T | Select typeface for primary font. Value of # can be from 0 to 255. Usable values are: 0 Line Printer 1 Pica 2 Elite 3 Courier 4 Helv 5 Tms Rmn 6 Letter Gothic 7 Script 8 Prestige |

| Command | Description |
|---|-------------------------------------|
| 9 | Caslon |
| 10 | Orator |
| 11 | Presentations |
| 14 | Swiss 721 |
| 15 | Dutch 801 |
| 17 | Optima |
| 18 | Garamond |
| 19 | Cooper Black |
| 20 | Coronet Bold |
| 21 | Broadway |
| 22 | Bauer Bodoni Black Condensed |
| 23 | Century Schoolbook |
| 24 | University Roman |
| These typeface names may be registered trade marks of a third party. Use of these fonts may be conditional upon a license grant from the owners of the fonts. | |
| ESC) s # T | Select typeface for secondary font. |

Symbol Set/Attribute Selection

| Command | Description |
|-----------|--|
| ESC (# @ | Select function for primary font. Value of # can be: 0 select default symbol set for this font 1 same as 0 2 select current primary symbol set for font 3 select default font and its attributes |
| ESC) # @ | Select function for secondary font. |

Font Management

| Command | Description |
|-------------|--|
| ESC * c # D | Specify font ID. Identifies a font for use in a subsequent command. Value of # can be from 0 to 32767. |

| Command | Description |
|-------------|---|
| ESC * c # F | Font management. Value of # can be: 0 delete all soft fonts (temporary and permanent) from memory 1 delete all temporary fonts from memory 2 delete font specified in last "ESC * c # D" command 4 make font specified in last "ESC * c # D" command a temporary font 5 make font specified in last "ESC * c # D" command a permanent font |

Specify Font

| Command | Description |
|-----------|---|
| ESC (# X | Select primary font. Value of # is font ID specified in "ESC * c # D" command (0 to 32767). |
| ESC) # X | Select secondary font. |

Downloading Fonts

| Command | Description |
|-----------------------|--|
| ESC * c # E | Specify character code. Identifies the decimal code that will be associated with the next character downloaded. Value of # can be 0 to 255, and is used to reference the character for printing. |
| ESC) s # W <data> | Download font header for font specified in the last "ESC * c # D" (specify Font ID) command. Value of # is the size of <data> in bytes, usually 26. Values of the bytes of <data> are expressed as the ASCII codes for numbers from 0 to 255. Values above 255 use 2 bytes, with the first containing the 8 most significant bits. Possible values are: Byte 0: always 0 Byte 1: always 26 |

| Command | Description |
|---------|--|
| | Byte 2: always 0 |
| | Byte 3: font type; either 0 (a 7-bit font using character values 33 to 127) or 1 (an 8-bit font using values 33 to 127 and 160 to 255) |
| | Bytes 4 & 5: always 0 |
| | Bytes 6 & 7: baseline position; distance in dots from baseline to top of cell |
| | Bytes 8 & 9: cell width; width of cell in dots, from 1 to 4200 |
| | Bytes 10 & 11: cell height; distance in dots from top to bottom of cell (1 to 4200) |
| | Byte 12: orientation; either 0 (portrait) or 1 (landscape) |
| | Byte 13: spacing; either 0 (monospaced) or 1 (proportional) |
| | Bytes 14 & 15: symbol set; calculate values for these 2 bytes based on the codes for the symbol sets in the "ESC (# ?" command. The formula to use for calculation is $(x \times 32 + y) - 64$, where x is the value of # and y is the ASCII decimal equivalent of ?. Thus for Roman-8 (code 8 U), the value is $(8 \times 32 + 85) - 64 = 277$ or binary 00000001 00010101. Thus the values for bytes 14 & 15 are 1 and 21, respectively. |
| | Bytes 16 & 17: font pitch, expressed in quarter-dots. Use the formula $1200/p$, where p is the pitch in cpi. Value can be from 2 to 1260. |
| | Bytes 18 & 19: cell height, expressed in quarter-dots. Use the formula $4 \times h$, where h is the cell height in dots. Value can be from 0 to 10922. |
| | Bytes 20, 21 & 22: always 0 |
| | Byte 23: style; either 0 (upright) or 1 (italic) |
| | Byte 24: stroke weight: from -7 (ultra thin) to 7 (ultra black) |
| | Byte 25: typeface; from 0 to 255 (see typeface codes above) |

| Command | Description |
|-----------------------|--|
| ESC (s # W <data> | <p>Download a character into printer memory. The character loaded is specified by the last "ESC * c # E" command. Value of # is the size of <data> in bytes. Value of <data> is a 16-byte header followed by data bytes that define the shape of the character. Possible values for the 16 header bytes are:</p> <p>Byte 0: always 4</p> <p>Byte 1: always 0 or 1</p> <p>Byte 2: always 14</p> <p>Byte 3: always 1</p> <p>Byte 4: 0 (portrait) or 1 (landscape)</p> <p>Byte 5: always 0</p> <p>Bytes 6 & 7: left offset; distance (in dots) from left edge of character cell to start of character (portrait), or from baseline to top of character (landscape)</p> <p>Bytes 8 & 9: top offset; distance (in dots) from baseline to top of character (portrait), or from left edge of character cell to right side of character (landscape)</p> <p>Bytes 10 & 11: width; character width in dots (portrait), or character height in dots (landscape)</p> <p>Bytes 12 & 13: height; character height in dots (portrait), or character width in dots (landscape)</p> <p>Bytes 14 & 15: escapement; distance to move after character is printed. Value is expressed in quarter-dots, and must be a multiple of 4.</p> <p>Byte 16 onwards: character data, expressed as byte values, where 1 indicates that a dot is to be printed, and 0 that it is not. For example, a value of 255 (binary 11111111) would print all eight dots in a single byte. The order in which you specify the data follows the way in which the laser scans the character, namely top left to bottom right (portrait) or top right to bottom left (landscape).</p> |

Graphics Commands

Rule and Pattern Dimensions

| Command | Description |
|-------------|---|
| ESC * c # A | Specify width of horizontal rule or fill pattern, in dots. Width is #/300 inch, default is 0. |
| ESC * c # H | Specify width of horizontal rule or fill pattern, in decipoints. Width is #/720 inches, default is 0. |
| ESC * c # B | Specify height of vertical rule or fill pattern, in dots. Height is #/300 inches, default is 0. |
| ESC * c # V | Specify height of vertical rule or fill pattern, in decipoints. Height is #/720 inches, default is 0. |

Rules and Patterns

| Command | Description |
|-------------|--|
| ESC * c # G | Specify degree of shading, or specify fill pattern (depending on "ESC * c # P" command). For shading, value of # can be from 1 (light) to 100 (dark). For fill pattern, value of # can be: <ol style="list-style-type: none"> 1 horizontal lines 2 vertical lines 3 diagonal lines (////) 4 diagonal lines (\\\\\\) 5 square cross-hatching 6 diamond cross-hatching |
| ESC * c # P | Print rule or pattern. Value of # determines whether rule or pattern is printed. Pattern used is that defined in last "ESC * c # G" command. Value of # can be: <ol style="list-style-type: none"> 0 print rule 2 print shading 3 print fill pattern |

Raster Graphics

| Command | Description |
|-----------------------|---|
| ESC * t # R | Set resolution for printing raster graphics. Value of # is resolution in dots per inch (dpi), and can be 75, 100, 150, or 300. The same graphics data prints much smaller at 300 dpi than at 75 dpi. |
| ESC * r # A | Start printing raster graphics. Value of # can be: 0 start at leftmost print position 1 start at current print position |
| ESC * b # W <data> | Print a line of raster graphics. Value of # is size of <data> in bytes. Value of <data> is one or more byte values, each of which shows the dots in a single row that are to be printed. A bit set to one indicates that the corresponding dot should print; zero bits do not print. Use a separate command for each row of graphics to be printed. |
| ESC * r B | Stop printing raster graphics. |

Macro Control Commands

| Command | Description |
|-------------|---|
| ESC & f # Y | Identify macro and make it the current macro. Value of # can be from 0 to 32767. |
| ESC & f # X | Macro control. Value of # can be: 0 begin definition of a macro 1 end macro definition and store as temporary macro 2 execute current macro, maintaining any changes the macro makes to printer settings 3 execute current macro, discarding any changes the macro makes to printer settings 4 enable automatic overlay (executes current macro at start of each page) |

| Command | Description |
|---------|--|
| 5 | disable automatic overlay |
| 6 | delete all macros (both temporary and permanent) |
| 7 | delete all temporary macros |
| 8 | delete current macro |
| 9 | make current macro a temporary macro |
| 10 | make current macro a permanent macro |

Printer Control Commands

Reset

| Command | Description |
|---------|---|
| ESC E | Reset all printer settings to default values. |

Auto Underline

| Command | Description |
|-------------|---|
| ESC & d # D | Turn on auto underline. Value of # can be: 0 fixed position 3 floating position |
| ESC & d @ | Turn off auto underline. |

End-of-Line Wraparound

| Command | Description |
|-------------|--|
| ESC & s # C | Control end-of-line wraparound. Value of # can be: 0 enable wraparound; printer inserts CR+LF if print line extends beyond right margin 1 disable end-of-line wraparound (default) |

Paper Control

| Command | Description |
|-------------|---|
| ESC & l # X | Set number of copies of each page. Value of # can be from 1 to 99. |
| ESC & l # H | Paper control. Value of # can be: 0 print current page 1 feed paper from bin 1 2 feed paper from manual feed slot 4 feed paper from bin 2 |

Line Termination

| Command | Description |
|-------------|--|
| ESC & k # G | Specify interpretation of line termination codes CR, LF and FF. Value of # can be: 0 CR=CR; LF=LF; FF=FF 1 CR=CR+LF; LF=LF; FF=FF 2 CR=CR; LF=CR+LF; FF=CR+FF 3 CR=CR+LF; LF=CR+LF; FF=CR+FF |

Display Functions

| Command | Description |
|---------|--|
| ESC Y | Display functions. Print out all codes received. |
| ESC Z | Turn off display functions mode. |

Transparent Print Data

| Command | Description |
|-----------------------|--|
| ESC & p # X <data> | Set number of characters of transparent print data. Prints out all codes received, for specified number of characters. |

C Character Sets

The PostScript text characters shown in the following pages are available in each font when using the RX7100PS as a PostScript printer. The PostScript symbols are available in the Symbol font and ZapfDingbats.

When using the resident HP LaserJet emulation, the RX7100PS uses Roman-8 as its default symbol set. Roman-8, PC-8 and ECMA 94 are shown as the representative, but other symbols are also available. Information on the the symbol sets, as well as sample print-outs, is included with each of these optional accessories.

1. Character sets for PostScript

• PostScript Standard

| H L | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|--------|---|---|----|---|---|---|---|---|---|---|----|-----|---|---|---|---|
| 0 | | | | 0 | @ | P | ' | p | | | | | | - | | |
| 1 | | | ! | 1 | A | Q | a | q | | | i | - | ` | | E | æ |
| 2 | | | " | 2 | B | R | b | r | | | ¢ | † | ' | | | |
| 3 | | | # | 3 | C | S | c | s | | | £ | ‡ | ^ | | a | |
| 4 | | | \$ | 4 | D | T | d | t | | | / | . | ~ | | | |
| 5 | | | % | 5 | E | U | e | u | | | ¥ | | - | | | l |
| 6 | | | & | 6 | F | V | f | v | | | f | ¶ | ~ | | | |
| 7 | | | ' | 7 | G | W | g | w | | | § | . | ' | | | |
| 8 | | | (| 8 | H | X | h | x | | | ¤ | , | " | | Ł | ł |
| 9 | | |) | 9 | I | Y | i | y | | | ' | " | | | Ø | ø |
| A | | | * | : | J | Z | j | z | | | " | " | . | | Œ | œ |
| B | | | + | ; | K | [| k | { | | | « | » | . | | ° | ß |
| C | | | , | < | L | \ | l | | | | < | ... | | | | |
| D | | | - | = | M |] | m | } | | | > | ‰ | ~ | | | |
| E | | | . | > | N | ^ | n | ~ | | | fi | | | | | |
| F | | | / | ? | O | _ | o | | | | fl | ¿ | ~ | | | |

● Symbol

| H L | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|--------|---|---|---|---|---|---|---|---|---|---|---|-----|---|---|---|---|
| 0 | | | 0 | ≡ | Π | — | π | | | | | ° | κ | ∠ | ∅ | |
| 1 | | ! | 1 | Α | Θ | α | θ | | | | Υ | ± | Σ | ∇ | < | > |
| 2 | | √ | 2 | Β | Ρ | β | ρ | | | | ' | ″ | ℥ | ⊗ | ⊕ | ∫ |
| 3 | | # | 3 | Χ | Σ | χ | σ | | | | ≤ | ≥ | ∅ | © | © | ∫ |
| 4 | | ∃ | 4 | Δ | Τ | δ | τ | | | | / | × | ⊗ | ™ | ™ | |
| 5 | | % | 5 | Ε | Υ | ε | υ | | | | ∞ | ∞ | ⊕ | Π | Σ | ∫ |
| 6 | | & | 6 | Φ | ζ | φ | ϖ | | | | f | ∂ | ∅ | √ | (|) |
| 7 | | ε | 7 | Γ | Ω | γ | ω | | | | ♣ | • | ∩ | · | | |
| 8 | | (| 8 | Η | Ξ | η | ξ | | | | ♦ | + | ∪ | — | (|) |
| 9 | |) | 9 | Ι | Ψ | ι | ψ | | | | ♥ | ≠ | ⊃ | ∧ | Γ | Γ |
| A | | * | : | Θ | Ζ | φ | ζ | | | | ♠ | ≡ | ⊃ | ∨ | | |
| B | | + | ; | Κ | [| κ | { | | | | ↔ | ≈ | α | ↔ | [|] |
| C | | , | < | Λ | ∴ | λ | | | | | ← | ... | ⊂ | ← | [|] |
| D | | - | = | Μ |] | μ | } | | | | ↑ | | ⊂ | ↑ | { | } |
| E | | . | > | Ν | ⊥ | ν | ~ | | | | → | — | ε | ⇒ | (|) |
| F | | / | ? | Ο | _ | ο | | | | | ↓ | ⌋ | ε | ↓ | | |

• ZapfDingbats

| H L | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| A | | | | | | | | | | | | | | | | |
| B | | | | | | | | | | | | | | | | |
| C | | | | | | | | | | | | | | | | |
| D | | | | | | | | | | | | | | | | |
| E | | | | | | | | | | | | | | | | |
| F | | | | | | | | | | | | | | | | |

2. Character sets for HP LaserJet

• Roman-8

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|-----|-----|----|---|---|---|---|-----|---|---|---|---|---|---|---|---|
| 0 | NUL | DLE | SP | 0 | ø | P | ` | p | | | | — | â | Å | Á | Þ |
| 1 | SOH | DC1 | ! | 1 | A | Q | a | q | | | À | Ý | ê | î | Ã | þ |
| 2 | STX | DC2 | " | 2 | B | R | b | r | | | Â | ý | ô | ø | ã | · |
| 3 | ETX | DC3 | # | 3 | C | S | c | s | | | È | ° | û | Æ | Ð | μ |
| 4 | EOT | DC4 | \$ | 4 | D | T | d | t | | | Ê | Ç | á | å | ö | ¶ |
| 5 | ENQ | NAK | % | 5 | E | U | e | u | | | Ë | ç | é | í | í | ¸ |
| 6 | ACK | SYN | & | 6 | F | V | f | v | | | Î | Ñ | ó | ø | ì | — |
| 7 | BEL | ETB | ' | 7 | G | W | g | w | | | Ï | ñ | ú | æ | ó | ¸ |
| 8 | BS | CAN | (| 8 | H | X | h | x | | | ´ | ı | à | Ä | ò | ½ |
| 9 | HT | EM |) | 9 | I | Y | i | y | | | ` | ı | è | ì | Õ | æ |
| A | LF | SUB | * | : | J | Z | j | z | | | ^ | ı | ò | Ö | õ | œ |
| B | VT | ESC | + | ; | K | [| k | { | | | ¨ | £ | ù | Ü | Š | « |
| C | FF | FS | , | < | L | \ | l | | | | ~ | ¥ | ä | É | š | ■ |
| D | CR | GS | - | = | M |] | m | } | | | Ù | Š | ë | ï | Ú | » |
| E | SO | RS | . | > | N | ^ | n | ~ | | | Û | f | ö | ß | ÿ | ± |
| F | SI | US | / | ? | O | _ | o | DEL | | | £ | ç | ü | Ô | ÿ | |

• PC-8

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|----|----|---|---|---|---|---|---|----|---|---|---|---|---|---|
| 0 | | ► | | 0 | ø | P | ` | p | Ç | É | á | ⋮ | ⊥ | ⊥ | α | ≡ |
| 1 | ☺ | ◄ | ! | 1 | A | Q | a | q | ü | æ | í | ⌘ | ⊥ | ⊥ | β | ± |
| 2 | ● | ↕ | " | 2 | B | R | b | r | é | Æ | ó | ⌘ | ⊥ | ⊥ | Γ | ≥ |
| 3 | ♥ | ⊥ | # | 3 | C | S | c | s | â | ô | ú | | ⊥ | ⊥ | π | ≤ |
| 4 | ♦ | ¶ | \$ | 4 | D | T | d | t | ä | ö | ñ | ⊥ | - | ⊥ | Σ | ∫ |
| 5 | ♣ | \$ | % | 5 | E | U | e | u | à | ò | Ñ | ⊥ | + | ⊥ | σ | ∫ |
| 6 | ♠ | - | & | 6 | F | V | f | v | å | û | æ | ⊥ | ⊥ | ⊥ | μ | ÷ |
| 7 | • | ↕ | ' | 7 | G | W | g | w | ç | ù | ó | ⊥ | ⊥ | ⊥ | τ | ≈ |
| 8 | ◼ | ↑ | (| 8 | H | X | h | x | ê | ÿ | ¿ | ⊥ | ⊥ | ⊥ | Φ | ° |
| 9 | ○ | ↓ |) | 9 | I | Y | i | y | ë | Ö | ⊥ | ⊥ | ⊥ | ⊥ | Θ | ● |
| A | ■ | → | * | : | J | Z | j | z | è | Ü | ⊥ | ⊥ | ⊥ | ⊥ | Ω | • |
| B | ♂ | ← | + | ; | K | [| k | { | ï | ç | ½ | ⊥ | ⊥ | ⊥ | δ | √ |
| C | ♀ | ⊥ | , | < | L | \ | l | | î | £ | ¼ | ⊥ | ⊥ | ⊥ | ∞ | η |
| D | ♪ | ↔ | - | = | M |] | m | } | ì | ¥ | ì | ⊥ | = | ⊥ | φ | ² |
| E | ♪ | ▲ | . | > | N | ^ | n | ~ | Ä | pt | « | ⊥ | ⊥ | ⊥ | ε | ■ |
| F | ✱ | ▼ | / | ? | O | _ | o | ✱ | Å | f | » | ⊥ | ⊥ | ⊥ | ∩ | |

• ECMA 94

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|-----|-----|----|---|---|---|---|-----|---|---|---|---|---|---|---|---|
| 0 | NUL | DLE | SP | 0 | @ | P | ' | p | | | | ° | À | Ð | à | ð |
| 1 | SOH | DC1 | ! | 1 | A | Q | a | q | | | ¡ | ± | Á | Ñ | á | ñ |
| 2 | STX | DC2 | " | 2 | B | R | b | r | | | ¢ | ² | Â | Ò | â | ò |
| 3 | ETX | DC3 | # | 3 | C | S | c | s | | | £ | ³ | Ã | Ó | ã | ó |
| 4 | EOT | DC4 | \$ | 4 | D | T | d | t | | | ¤ | ´ | Ä | Ô | ä | ô |
| 5 | ENQ | NAK | % | 5 | E | U | e | u | | | ¥ | µ | Å | Õ | å | õ |
| 6 | ACK | SYN | & | 6 | F | V | f | v | | | ¦ | ¶ | Æ | Ö | æ | ö |
| 7 | BEL | ETB | ' | 7 | G | W | g | w | | | § | · | Ç | × | ç | ÷ |
| 8 | BS | CAN | (| 8 | H | X | h | x | | | ¨ | , | È | Ø | è | ø |
| 9 | HT | EM |) | 9 | I | Y | i | y | | | © | ¹ | É | Ù | é | ù |
| A | LF | SUB | * | : | J | Z | j | z | | | ª | º | Ê | Ú | ê | ú |
| B | VT | ESC | + | ; | K | [| k | { | | | « | » | Ë | Û | ë | û |
| C | FF | FS | , | < | L | \ | l | | | | ¬ | ¼ | Ì | Ü | ì | ü |
| D | CR | GS | - | = | M |] | m | } | | | - | ½ | Í | Ý | í | ý |
| E | SO | RS | . | > | N | ^ | n | ~ | | | ® | ¾ | Î | Þ | î | þ |
| F | SI | US | / | ? | O | _ | o | DEL | | | — | ¿ | Ï | ß | ï | ÿ |

D HP Font Cartridge Compatibility

Many software programs have printer drivers specifically designed for a certain combination of printer fonts – typically a combination available on one of the optional font cartridges for HP LaserJet printers. For full software compatibility, you may wish to have the same fonts available on your RX7100PS. The following table shows the HP cartridge (each one is identified by a letter of the alphabet), the fonts included, and the equivalent Fujitsu font card names.

The fonts provided on these font cards are available whenever you use the HP LaserJet emulation or one of the optional emulation cards. They cannot be used if the PostScript interpreter is selected.

| HP Fonts | HP cartridge | Fujitsu card |
|---|-------------------------|-----------------------------|
| Courier 10 bold Courier 10 italic Line Printer light landscape | A Courier 1 | n/a |
| 14.4 Helv bold 10 TmsRmn 10 TmsRmn bold 10 TmsRmn italic 8 TmsRmn light Line Printer landscape | B Tms Proportional 1 | 21. Tms Rmn Compatible C |
| Courier 10 Courier 10 bold Courier 10 italic Line Printer Line Printer landscape | C International 1 | n/a |
| Prestige Elite 12 Prestige Elite 12 bold Prestige Elite 12 italic | D Prestige Elite | 4. Prestige A |
| Letter Gothic 12 Letter Gothic 12 bold Letter Gothic 12 italic | E Letter Gothic | 9. Letter Gothic A |

| HP Fonts | HP cartridge | Fujitsu card |
|---|-------------------------|-----------------------------|
| 14.4 Helv bold 10 TmsRmn 10 TmsRmn bold 10 TmsRmn italic 8 TmsRmn Line Printer | F Tms Proportional 2 | 18. Tms Rmn Compatible A |
| Prestige Elite 12 Prestige Elite 12 bold Prestige Elite 12 italic Prestige Elite 16.66 Prestige Elite 16.66 landscape Line Draw 12 | G Legal Elite | 24. Prestige Legal A |
| Courier 10 Courier 10 bold Courier 10 italic Prestige Elite 16.66 Prestige Elite 16.66 landscape Line Draw 10 | H Legal Courier | 2. Courier Legal A |
| Prestige Elite 12 Prestige Math 12 Prestige Pi Font 12 Prestige bold 12 Prestige italic 12 Prestige Elite 16.66 Prestige Math 16.66 | J Math Elite | 27. Prestige Math A |
| 10 TmsRmn 10 Tms Math 10 Tms Pi Font 10 TmsRmn bold 10 TmsRmn italic 8 TmsRmn 8 Tms Math | K Math Tms | 25. Tms Rmn Compatible D |
| Courier 10 bold Courier 10 italic Line Printer Courier 10 bold landscape Courier 10 italic landscape Line Printer landscape | L Courier P&L | 1. Courier A |

| HP Fonts | HP cartridge | Fujitsu card |
|--|-------------------------|--|
| Prestige Elite 12 Prestige Elite 12 bold Prestige Elite 12 italic Prestige Elite 12 landscape Prestige Elite 12 bold landscape Prestige Elite 12 italic landscape | M Prestige Elite P&L | 4. Prestige A 5. Prestige B |
| Letter Gothic 12 Letter Gothic 12 bold Letter Gothic 12 italic Letter Gothic 12 landscape Letter Gothic 12 bold landscape Letter Gothic 12 italic landscape | N Letter Gothic P&L | 9. Letter Gothic A 26. Letter Gothic B |
| 10 TmsRmn 10 TmsRmn bold 10 TmsRmn italic 10 TmsRmn landscape 10 TmsRmn bold landscape 10 TmsRmn italic landscape | P TmsRmn P&L | 18. Tms Rmn Compatible A 19. Tms Rmn Compatible B |
| Courier 10 bold Courier 10 italic Letter Gothic 12 Letter Gothic 12 bold Courier 10 bold landscape Courier 10 italic landscape | Q Memo 1 | 1. Courier A 9. Letter Gothic A |
| Presentation 6.5 bold P&L Presentation 8.1 bold P&L Presentation 10 bold P&L Letter Gothic 10 P&L PC Line bold 10 P&L Line Draw 10 P&L | R Presentations 1 | n/a |
| 14 Helv bold 12 Helv bold 10 Helv bold 8 Helv bold 8 Helv 6 Helv Tax Line Draw 10 | T Tax 1 | 30. Helv Compatible C |

| HP Fonts | HP cartridge | Fujitsu card |
|--|----------------------|--|
| 14 Helv2 bold 12 Helv2 bold 10 Helv2 bold 8 Helv2 6 Helv2 Letter Gothic 16.66 Line Draw 10 | U Forms portrait | 11. Helv Compatible A 9. Letter Gothic A |
| 14 Helv2 bold landscape 12 Helv2 bold landscape 10 Helv2 bold landscape 8 Helv2 landscape 6 Helv2 landscape Letter Gothic 16.66 landscape Line Draw 10 landscape | V Forms landscape | 12. Helv Compatible B |
| Letter Gothic 10 Letter Gothic 16.66 OCR A 10 Barcode 3-of-9 4.6 Barcode 3-of-9 9.3 Line Draw 10 | W 3-of-9/OCR A | n/a |
| 12 Barcode EAN/UPC 12 Barcode EAN/UPC bold OCR B 10 Letter Gothic 10 Letter Gothic 16.66 Line Draw 10 | X EAN/UPC/OCR B | n/a |
| Courier 10 Courier 10 bold Courier 10 italic Line Printer Line Printer landscape | Y PC Courier 1 | 29. Courier PC1 23. Line Printer PC |

| HP Fonts | HP cartridge | Fujitsu card |
|------------------------|--------------|--------------|
| 14 Helv bold | Z | n/a |
| 12 Helv | Microsoft 1 | |
| 12 Helv bold | | |
| 12 Helv italic | | |
| 10 Helv | | |
| 10 Helv bold | | |
| 10 Helv italic | | |
| 8 Helv | | |
| 14 TmsRmn bold | | |
| 12 TmsRmn | | |
| 12 TmsRmn bold | | |
| 12 TmsRmn italic | | |
| 10 TmsRmn | | |
| 10 TmsRmn bold | | |
| 10 TmsRmn italic | | |
| 8 TmsRmn | | |
| Line Printer landscape | | |

E

Interface Information

| | |
|------------------------------|-----|
| Introduction | E-1 |
| AppleTalk Interface | E-1 |
| Parallel Interface | E-1 |
| RS232 Serial Interface | E-4 |
| RS422 Serial Interface | E-5 |
| Serial Protocols | E-6 |

1

2

3

4

5

Introduction

The RX7100PS includes three interface connectors as standard equipment: Centronics parallel, RS232C (25-pin) serial and RS422 (9-pin) serial. The 9-pin connector is also used for AppleTalk. The interface connectors are located on the back of the printer. A plastic door slides left or right to expose one of the connectors.

This appendix includes information you may need if you are wiring your own interface cables or programming for computer-to-printer communications. Most users will not need to refer to this appendix; if you are simply trying to connect your printer to your computer, check the instructions in Chapter 2.

AppleTalk Interface

The 9-pin connector is used for AppleTalk. You need an AppleTalk connector box with a 9-pin plug, as is used with the Macintosh. You cannot use the 25-pin connector for AppleTalk.

Never operate the RX7100PS connected to an AppleTalk network unless you have first set the printer's interface to AppleTalk.

Parallel Interface

The parallel interface is the industry-standard Centronics interface. The connector pin assignments are shown in the following chart.

| Pin no. | Return pin no. | Signal name | Direction | Description |
|---------|----------------|-------------|-----------|---|
| 1 | 19 | Data Strobe | In | Strobe pulse for reading data. Printer reads data when this signal is low. The pulse width must be 0.5 μ s or more at the receiving terminal. |

| Pin no. | Return pin no. | Signal name | Direction | Description |
|---------|----------------|---------------|-----------|--|
| 2-9 | 20-27 | Data 1-Data 8 | In | Data 8 is the most significant bit, but is not used in 7-bit ASCII communications. All signals indicating data is logical 1 should go high at least 0.5 μ s before the falling edge of the Data Strobe signal and must stay high for at least 0.5 μ s after the rising edge. |
| 10 | 28 | Acknowledge | Out | Pulsed signal indicating the printer has received data and is ready to accept the next data. |
| 11 | 29 | Busy | Out | Data cannot be received when this signal is high. This signal turns high during data entry, initialization, when the buffer is full, or when an error occurs. |
| 12 | 30 | Paper Empty | Out | This signal goes high when the printer is out of paper. |
| 13 | | Select | Out | This signal indicates the selected (online) state when high. |
| 14 | | Signal Ground | | Logic ground level (0 V) |
| 19-29 | | Signal Ground | | Twisted pair return lines |

| Pin no. | Return pin no. | Signal name | Direction | Description |
|---------|----------------|-------------|-----------|--|
| 31 | | Input Prime | In | If this signal is low for more than 50 μ s, the printer is reset to initial condition and placed online. |
| 32 | | Fault | Out | This signal goes low during paper outage, when the cover is open, or when there is another printer error. |

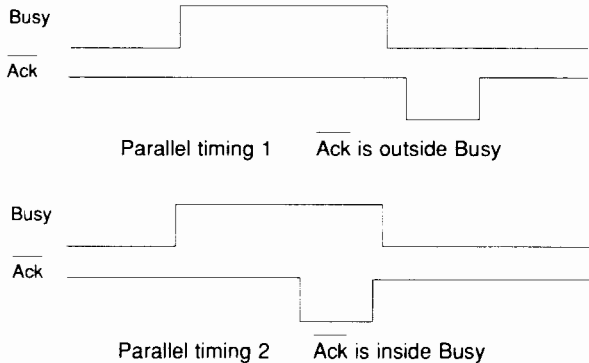
In the preceding chart, direction "in" indicates a signal input to the printer from the computer. "Out" indicates a signal output from the printer.

The return lines specified represent a twisted pair return line, one side of which is connected to signal ground level.

Standard signal levels are 0.0 to +0.4 V for low, +2.4 to +5.0 V for high.

The 9-pin RS422 serial interface is automatically set up as an output channel to return information to the computer when you are using the parallel interface. This output may be ignored, but sometimes important information may be output on this channel.

The following diagrams represent the two types of parallel interface timing:



RS232 Serial Interface

The RS232 serial interface connects through a male DB25 connector. The pin assignments are shown in the following chart.

| Pin number | Signal name | Direction | Description |
|------------|-------------|-----------|---|
| 1 | FG | | Frame Ground |
| 2 | TD | Out | Transmitted Data. This pin carries information from the printer to the computer. |
| 3 | RD | In | Received Data. This pin carries information from the computer to the printer. |
| 4 | RTS | Out | Request To Send. Spaces are sent when the printer is ready to transmit data. |
| 6 | DSR | In | Data Set Ready. Spaces are sent when the computer is ready to send or receive data. Connection of this pin is optional. |
| 7 | SG | | Signal Ground |
| 20 | DTR | Out | Data Terminal Ready. Spaces are sent when the printer is ready to send or receive data. Connection of this pin is optional. |

In the preceding chart, direction "in" indicates a signal input to the printer from the computer. "Out" indicates a signal output from the printer.

Signal level for mark (logical 1) is -3 V or lower; space (logical 0) is +3 V or higher.

RS422 Serial Interface

The RS422 serial interface connects through a male DB9 connector. The pin assignments are shown in the following chart.

| Pin number | Signal name | Direction | Description |
|------------|-------------|-----------|---|
| 1 | SG | | |
| 3 | SG | | Signal Ground |
| 4 | TD+ | Out | |
| 5 | TD- | Out | Transmitted Data. These pins carry information from the printer to the computer. |
| 7 | HSKO | Out | Handshake output. This output is used only when DTR protocol and LaserJet emulation are specified. Spaces are sent when the printer is ready to send or receive data. |
| 8 | RD+ | In | |
| 9 | RD- | In | Received Data. These pins carry information from the computer to the printer. |

In the preceding chart, direction "in" indicates a signal input to the printer from the computer. "Out" indicates a signal output from the printer.

Signal level for mark (logical 1) is -3 V or lower; space (logical 0) is +3 V or higher.

Serial Protocols

A protocol ensures that the computer does not send information faster than the printer can process it. By telling the computer when it can receive data, a protocol prevents the printer's buffer from overflowing. The RX7100PS offers a choice of three different protocols for connection to a wide variety of computers: XON/XOFF, DTR, and ETX/ACK. If your computer's documentation doesn't recommend a protocol to use, try DTR. The protocols are described in the following chart.

| Protocol name | Description |
|--------------------------|---|
| XON/XOFF (or DC1/DC3) | <p>When the printer is ready to receive data, it sends the XON code (hexadecimal 11). When the buffer becomes nearly full (or when the printer is switched offline in the LaserJet emulation), the XOFF code (hexadecimal 13) is sent. The computer must stop transmitting data upon receiving the XOFF or information may be lost. If paper runs out or the printer cover is opened, the XOFF code (hexadecimal 13) is sent.</p> <p>This protocol requires only that the ground and data wires are connected between the printer and computer. It can be used with both the RS232 (25-pin) and RS422 (9-pin) connectors.</p> |

| Protocol name | Description |
|------------------------|---|
| DTR (or Ready/Busy) | <p>DTR is a hardware protocol; that is, the signal on a wire is used to control the flow of data rather than sending a character. DTR works by controlling the signal on pin 20. When the printer is ready to receive data, pin 20 is high. When the buffer becomes nearly full (or when the printer is switched offline in the LaserJet emulation), pin 20 goes low. The computer must stop transmitting data immediately or information may be lost.</p> <p>This protocol requires that the ground and data wires, as well as pin 20 (DTR) are connected between the printer and computer. It can only be used with the RS232 (25-pin) connector. Pin 6 (DSR) should also be connected for communications back to the computer.</p> |
| ETX/ACK | <p>This protocol makes use of two control characters, called ETX and ACK. The computer sends blocks of up to 1024 characters ended with an ETX to the printer. When the printer is ready to receive the next block it responds by sending an ACK.</p> |

F Supplies and Accessories

The supplies and accessories listed in this appendix are available from your Fujitsu dealer. Contact your dealer for ordering or for additional information on these products.

Supplies

| Part name (order number) | Description |
|---------------------------------------|--|
| Process cartridge (D860-1163-T401) | The cartridge consists of a photo-conductive drum, developing unit, toner, and drum cleaner in a single module. The package also contains a cotton swab for cleaning the corona wire and a heat roller cleaning pad. |
| Ozone filter (D860-1163-X771) | |

Accessories

| Part name (order number) | Description |
|---|-------------------|
| Font cards - LaserJet (D05B-9009-C010) | Courier A |
| (D05B-9009-C011) | Courier Legal A |
| (D05B-9009-C012) | Courier PC1 |
| (D05B-9009-C013) | Courier PC2 |
| (D05B-9009-C014) | Courier PC3 |
| (D05B-9009-C080) | Dutch 801 10PC1 |
| (D05B-9009-C084) | Dutch 801 12A |
| (D05B-9009-C060) | Helv Compatible A |
| (D05B-9009-C061) | Helv Compatible B |
| (D05B-9009-C070) | Helv Compatible C |

| Part name (order number) | Description |
|--------------------------|----------------------|
| (D05B-9009-C040) | Letter Gothic A |
| (D05B-9009-C041) | Letter Gothic B |
| (D05B-9009-C042) | Letter Gothic PC1 |
| (D05B-9009-C101) | Line Printer PC |
| (D05B-9009-C100) | OCR A/B |
| (D05B-9009-C020) | Prestige A |
| (D05B-9009-C021) | Prestige B |
| (D05B-9009-C025) | Prestige Legal A |
| (D05B-9009-C026) | Prestige Math A |
| (D05B-9009-C022) | Prestige PC1 |
| (D05B-9009-C023) | Prestige PC2 |
| (D05B-9009-C024) | Prestige PC3 |
| (D05B-9009-C062) | Swiss 721 10A |
| (D05B-9009-C068) | Swiss 721 10PC1 |
| (D05B-9009-C064) | Swiss 721 12A |
| (D05B-9009-C066) | Swiss 721 14A |
| (D05B-9009-C082) | Tms Rmn Compatible A |
| (D05B-9009-C083) | Tms Rmn Compatible B |
| (D05B-9009-C086) | Tms Rmn Compatible C |
| (D05B-9009-C087) | Tms Rmn Compatible D |

G Specifications

| | |
|-----------------------------------|---|
| Printing Technology | LED light-sourced electrophotography |
| Dimensions | Width: 16 inches (406 mm) Depth: 15.7 inches (399 mm), excluding the bin and stacker Height: 6.7 inches (169 mm), excluding the bin Weight: 43.9 pounds (19.9 kg) |
| Power Requirements | 100 to 120 VAC \pm 10%, 50/60 \pm 2 Hz (USA) Consumption: 700 W (100 VAC) |
| Environmental Requirements | Temperature: 50° to 95°F (10° to 35°C) operating, 32° to 104°F (0° to 40°C) storage Humidity: 20% to 80% relative humidity (non-condensing), operating and storage |
| Noise | Printing: 53 dbA or less Standby: 45 dbA or less |
| Safety Certification | Safety: meets or exceeds UL 478, CSA 22.2-220, IEC 380, and VDE 0806 specifications Radiation: meets or exceeds FCC Class B and VDE 0871 Class B specifications |
| Performance | Print resolution: 300 dots per inch (text and graphics) Printing speed: 5 pages per minute (character printing on A4 size paper from bin 1) Warm-up time: 40 seconds at 77°F (25°C) Recommended duty cycle: up to 3000 pages per month Process cartridge life: 6000 pages at 5% print density |

| | |
|---------------------------|---|
| Computer Interface | Centronics (parallel), RS232C (serial), RS422 (serial), and AppleTalk (AppleTalk is supported in PostScript environment only) |
| Controller | Processor: MC68000 12.5 MHz RAM: 4 MB ROM: 1.5 MB |
| Emulation | Standard: PostScript Hewlett-Packard LaserJet series II |
| Fonts (PostScript) | Avant Garde Gothic Book Avant Garde Gothic Book Oblique Avant Garde Gothic Demi Avant Garde Gothic Demi Oblique Bookman Light Bookman Light Italic Bookman Demi Bookman Demi Oblique Courier Courier Bold Courier Oblique Courier Bold Oblique Helvetica Helvetica Bold Helvetica Oblique Helvetica Bold Oblique Helvetica Narrow Medium Helvetica Narrow Medium Oblique Helvetica Narrow Bold Helvetica Narrow Bold Oblique New Century Schoolbook Roman New Century Schoolbook Italic New Century Schoolbook Bold New Century Schoolbook Bold Italic Palatino Roman Palatino Italic Palatino Bold Palatino Bold Italic |

Times Roman
 Times Bold
 Times Italic
 Times Bold Italic
 Symbol
 Zapf Chancery Medium Italic
 Zapf Dingbats

Fonts (LaserJet)

Resident: Courier portrait
 Courier landscape
 Courier Bold portrait
 Courier Bold landscape
 Line Printer portrait
 Line Printer landscape
 Optional IC card: see Appendix F
 Optional soft fonts: available from independent vendors

Paper**Type**

Single sheet photocopy paper (equivalent to Xerox 4024), bond paper, and overhead transparencies (equivalent to 3M 731)

Size

Minimum: 3-15/16" wide x 5-13/16" long
 (100 mm x 148 mm) (minimum length for bin 2 is 9-1/2" (241 mm))
 Maximum: 8-1/2" x 14-1/8" (216 mm x 360 mm)
 Standard: Legal (8-1/2" x 14"), Letter (8-1/2" x 11"), A4 (210 mm x 297 mm), B5 (182 mm x 257 mm)

Weight

Basis 17 to 28 pound bond (64 to 105 g/m²) in bin or manual feed slot

Capacity

Input bin: 150 sheets of 20 pound bond (75 g/m²)
 Manual feed slot: 1 sheet
 Output stacker: 150 sheets of 20 pound bond (75 g/m²)

Glossary

A

A4 size A standard European letter size: 210 mm x 297 mm.

AppleTalk network A group of computers and peripherals linked together by special connectors and cables. AppleTalk software permits high-speed communications between the devices on the network.

Application software Program that performs a particular task on the computer. Word processing, accounting, and database programs are examples of application software.

ASCII An acronym for American Standard Code for Information Interchange, ASCII is a standard set of 256 codes (numbered 0 to 255) used to communicate information between the computer and the printer. Each symbol is represented by a unique binary number, which is often expressed as a decimal or hexadecimal number. For example, the letter "A" is represented by 01000001 binary, which is equivalent to 65 decimal or 41 hexadecimal.

B

B5 size A standard Japanese letter size: 182 mm x 257 mm.

Baud Also called baud rate. Unit of measure (in bits per second) for the speed or rate information is being transmitted. Baud rates are used when communicating through the printer's serial interface. 1200 baud is approximately equal to 120 characters per second. Faster (higher) baud rates mean faster transmission.

Bin The RX7100PS paper input tray for cut sheets. The RX7100PS can be configured with one or two bins; they can be selected with the control panel or by software.

Binary Base-two numbering system, using digits 0 and 1, representing the ON and OFF states in a computer's memory. For example, the letter "A" is expressed in binary numbers as 0100 0001.

Bit A binary digit, or bit, is the smallest unit of information in a computer's memory, and has the value 0 or 1. Eight bits equal one byte.

Buffer A storage area in the memory of the printer or computer. The buffer temporarily holds information until it can be processed by the device. For example, the printer's buffer holds information it receives from the computer until it can be printed.

Byte A group of eight binary digits that represent a single character.

C

Card slot An opening in the printer to install an optional font or emulation card. The RX7100PS has three card slots, located below the output stacker.

Carriage return A character (0D hexadecimal) that acts as a command to move the cursor to the left margin.

Character Any letter, number, or symbol.

Cleaning pad A felt pad that cleans the heat roller when installed in the printer. The cleaning pad should be replaced each time the process cartridge is replaced.

| | |
|----------------------------------|--|
| Command | An instruction that tells the printer what to do. A printer command usually consists of an escape code followed by one or more characters. |
| Command set | A series of commands that are common to one brand of printer. The RX7100PS is furnished with the HP LaserJet series II command set, meaning it can interpret commands written for that printer. |
| Configuration | Changing certain printer settings to allow your computer to communicate properly with the printer. For example, interface selection is part of printer configuration. |
| Control code | Initiates a printer function. For example, CR (Carriage Return), LF (Line Feed) and FF (Form Feed) are control codes. |
| Corona wire | A fine wire in the printer used to impact an electrical charge to the photoconductive drum to make it sensitive to light (precharger) or impact a negative charge to the paper to cause the toner to move from drum to paper (transfer charger). |
| CPI (characters per inch) | CPI is the number of characters printed per horizontal inch in a printed line. CPI is also referred to as pitch. Typical print pitches include 10 pitch (10 CPI) and 12 pitch (12 CPI). |
| D | |
| Data | Information. |
| Default | If you do not specify a choice, the printer uses an "automatic" choice, or default, for a particular function, setting, or option. Settings in effect when you turn on or reset the printer are called power-on defaults. |

Downloading The process of transferring fonts from the computer to the printer's memory. These downloaded fonts can be stored until the printer is turned off. These fonts are stored on floppy disks or a hard disk and are also called soft fonts.

E

Emulation Execution of a command set that allows one printer to act like another printer. (The RX7100PS can emulate the HP LaserJet series II.) Additional emulations are contained on optional cards that can be inserted in the printer.

Emulation card Plug-in card that allows the RX7100PS to emulate another brand of printer.

Escape A character used to identify a printer command. Escape instructs the printer to interpret the codes following it as a command sequence. ESC is an ASCII character represented by decimal 27 (hexadecimal 1B).

Escape sequence Printer commands are also called escape sequences.

F

Font A complete set of type in one size and style of characters, for example, 10 point Courier bold.

Font card A removable card containing one or more fonts. When the card is plugged into the printer's card slot, the printer has access to the font(s) on the card.

Font substitution An option on Macintosh computers that automatically substitutes RX7100PS resident fonts for equivalent Macintosh fonts.

Form feed A command to the printer to print the data currently in the buffer and move the cursor to the top of the next page. This is not effective in PostScript.

Form length A printer setting for the spacing between top-of-form positions measured in inches.

H

Hexadecimal Base-16 numbering system, using digits 0-9 and letters A-F. Hexadecimal is a convenient way of expressing binary numbers, since each group of four bits can be quickly converted to one hexadecimal digit.

Hex dump Special debugging tool used to analyze codes and characters sent to the printer. Control codes and print data are printed out in hexadecimal format.

HMI (Horizontal Motion Index) The distance between columns in 1/120-inch increments. For example, the HMI for 10 pitch (10 characters per inch) is 12/120 inch.

I

IC (Integrated Circuit) card A removable card containing a printer emulation or fonts. When the card is plugged into the printer's card slot, the printer has access to the emulation or fonts on the card.

Interface The connection by which electrical signals are transferred from one part of a system to another (e.g., from the computer to the printer and vice versa).

L

Landscape orientation See *Orientation*.

Legal size Standard US legal size: 8-1/2" x 14".

Letter size Standard US letter size: 8-1/2" x 11".

Line spacing The vertical spacing between lines, measured in lines per inch (LPI).

M

Menu mode One of two printer modes (the other is normal mode). Menu mode is used to install the printer initially, to change fonts or page layout, and to check printer operation. Messages displayed in menu mode include the options for various settings.

N

Nonvolatile memory Memory that retains information even if the power is turned off.

Normal mode One of two printer modes (the other is menu mode). Normal mode is used for everyday printer operation. Messages displayed in normal mode include online/offline status and error conditions.

O

Offline When the printer is offline, it is effectively "disconnected" from the computer and it is controlled locally (i.e., by the control panel). Information sent by the computer is buffered until the printer is placed online again.

Online Communications between the printer and computer are enabled. When the printer is online, it is controlled by the computer; the control panel (except for the **ONLINE** button) is not functional.

Orientation The direction in which you hold the paper to read the printed image. With portrait orientation, you hold the long sides of the paper vertical. With landscape orientation, you hold the short sides of the paper vertical.

P

- Parallel interface** Transfers information to a peripheral device over separate wires, allowing all of the bits that make up a character to be transmitted simultaneously. Parallel printer interfaces are generally standardized and easy to operate.
- Pitch** The number of characters printed per horizontal inch. The most commonly used are 10 pitch (10 characters per inch) and 12 pitch (12 characters per inch).
- Point size** A unit of measurement that equals $1/72$ of an inch. Font height is measured in points.
- Portrait orientation** See *Orientation*.
- PostScript** A programming language interpreted by the controller in the RX7100PS. Programs written in PostScript language define and print pages, so it is known as a page description language.
- Precharger wire** A fine wire in the printer used to impact an electrical charge to the photoconductive drum to make it sensitive to light.
- Print density** The comparative darkness or lightness of the printed image as it appears on the page. Very dense print will tend to fill in the small white areas of letters and numbers, while very light print may show pinholes of white in areas which should be solid black. The print density can be adjusted with the print density dial on the front of the printer.
- Printable area** The area of the physical page in which the printer is able to print. The physical page refers to the size of the paper installed in the printer.

Process cartridge A single module consisting of a photoconductive drum, developing unit, toner, and drum cleaner.

Protocol A set of rules used by the computer and printer to control the flow of data to prevent buffer overflow.

R

Resident fonts Fonts that permanently reside in the printer's memory. The RX7100PS has six resident fonts: Courier, Courier bold, and Line Printer (each can be printed in portrait or landscape orientation).

S

Screen fonts Fonts designed for display on the Macintosh screen which are equivalent to the RX7100PS resident fonts.

Serial interface Transfers data to a peripheral device along a single wire (although other wires are used for control). Serial interfaces allow the use of very long cables between devices such as printers and computers.

Soft font Fonts that are contained on floppy disks or hard disks. These fonts are downloaded to the printer using software programs.

Symbol set The unique grouping of characters (letters, numbers, and punctuation) and symbols in a font. Different symbol sets are designed for different types of applications.

T

Toner Charged carbon particles that adhere to charged areas on the photoconductive drum to produce a visible image on the drum. Toner is then transferred to paper and melted by the heat roller to produce a permanent image on the paper.

Top-of-form The very top of the page.

V

VMI (Vertical Motion Index) The distance between rows in 1/48-inch increments. For example, the VMI for default 1/6-inch line spacing is 8/48-inch.

100
100
100
100

100

100

100

100

100

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